THE BEAUTIES OF NATURE and ART DISPLAYED, IN A TOUR through the WORLD;

CONTAINING,

I. A General Account of all the Countries in the World, remarkable for either Natural or Artificial Curioſities; their Situation, Boundaries, Extent and Diviſions; their Rivers, Air, Soils, Chief Cities, &c.

II. A particular Account of the moſt curious natural Productions of each Country, in the Animal, Vegetable, and Foſſil Kingdoms; of remarkable Mountains, Caverns, and Volcano's; of Medicinal and other ſingular Springs; of Cataracts, Whirlpools, &c.

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Illuſtrated and embelliſhed with Copper Plates.

VOL. XIV.

LONDON:
Printed for J. PAYNE, at the Feathers, in Pater-Noſter-Row. M.DCC.LXIV.

BODLEIAN
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THE BEAUTIES OF NATURE AND ART DISPLAYED, IN A TOUR through the WORLD.

SECT. II. *of* CHAP. I. PART IV.

Of ANIMALS *continued*.

THE Rattle-Snake, is an animal for which Braſil is remarkable, amongſt others of the ſerpent kind, though not peculiar to that country, but found commonly enough in moſt of the warm parts of America; and we ſhall be the more particular on this ſubject, as the creature has afforded matter of ſpeculation and wonder to the moſt curious inſpectors into the works of nature. To begin then with its name: It is ſo called from certain joints at the end of its tail, which fold over each other ſomewhat like the tail of a lobſter; and theſe being ſhook by the animal, make a rattling noiſe,

from

from whence it has got the denomination of Rattle-Snake. The number of theſe joints or rattles is uncertain, being more or leſs according to the age of the ſnake, as ſome authors aſſert, imagining that every year there is the addition of a new rattle. However, they ſeldom exceed twenty, though Mr. Dudley was told by a man of credit, that he killed a Rattle-Snake, which had between ſeventy and eighty rattles, with a ſprinkling of grey hairs, like briſtles, all over his body, and that it was full five feet ſix inches long, and as big as the calf of a man's leg. Dr. Derham and others have obſerved, that providence has wiſely given theſe rattles to this poiſonous ſerpent, that the noiſe might be a warning to man and beaſt to avoid the approaching danger.

The uſual length of the Rattle-Snake is from three to five feet: Dr. Tyſon diſſected one four feet five inches long, whoſe greateſt circumference, which was in the middle, was ſix inches and a half, that of the neck three inches, and near the rattle two inches. The top of the head was flat as in the viper *, and by the protuberance of the jaws it ſomewhat reſembled the head of a bearded arrow.

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* Our author, upon the diſſection of this ſnake, found its parts, both external and internal, ſo much like thoſe of a viper in almoſt all reſpects, that he does not ſcruple to place it in that claſs; and from the rattle, which ſufficiently diſtinguiſhes it from all other ſerpents, to name it *Vipera caudiſona*.

At the extremity of it were the noſtrils; and between them and the eyes, but a little lower, were two other orifices, which the Doctor took for ears; but he afterwards found they only led into a bone that had a pretty large cavity, but no perforation. The eye was round, and about a quarter of an inch in diameter, over which there was a large ſcale jetting out, which ſeemed to ſerve it for an eye-lid. The ſcales on the head were the ſmalleſt of any, thoſe on the back the largeſt, increaſing in proportion to the thickeſt part of the body, and thence diminiſhing again to the junction of the rattle, all of them in figure ſomewhat reſembling the ſeed of a parſnip. They were of various colours, thoſe on the head being like the feathers on the back of a green-finch, ſpeckled with a ſmall black ſpot, four of which were larger and very remarkable. Thoſe on the back were a dark fillemot and ſpeckled, forming by this mixture a curious chequer-work; but as they grew nearer the end of the tail, they became darker, and at laſt almoſt black. The ſcales on the back had an edged riſing in the middle, which was ſtill leſs protuberant nearer the ſides, where they were flat. The belly was covered with long ſcales of a yellowiſh colour, and ſpeckled with black; but beyond the anus there were ſome ſcales of a lead-colour, and from them to the rattle were ſix rows of ſmaller ſcales of the ſame colour. The ſcales of the belly were joined together by diſtinct muſcles, the lower tendon of each muſcle being inſerted into the upper edge of the following ſcale, and the other tendon of the ſame muſcle inſerted about the middle of the preceding ſcale. To each ſcale a rib was appropriated, whoſe point was joined with the extremity of it, which muſt conſiderably promote the uſe for which nature deſigned them, viz. aſſiſting them to perform their reptile motions; for the ſcales are indeed ſo many feet, which being free and open below, do thereby take hold of the ground, and ſo contract their body forwards, and then ſhoot it out again. Hence it is, that on the rocks they move quicker than on the earth or plains, becauſe there they have firmer footing; but in ſoft ground, though their belly be flat, they can alter its figure ſo as to take the deeper hold, as it is obſerved in a viper. In a word, this coat of armour, which is for their defence, is ſo curiouſly contrived, that, though it cover the whole body, yet by its frequent jointings it admits the animal to make various motions.

Upon examining the lungs of the Rattle-Snake, which conſiſt only of one lobe, the fore part whereof is full of numerous veſicles, and the latter an entire large bladder, our author takes occaſion to obſerve, that in animals where reſpiration is not ſo frequent, nature provides a ſufficient ſtore-houſe for the air in ſuch large bladders, whence it is diſpenſed as the animal œconomy requires it; for tortoiſes, vipers, rattle ſnakes, toads, &c. which ſleep a great part of the year, as previouſly to this repoſe they take in their ſtore of food, ſo perhaps of air too; for whilſt they remain thus aſleep, and ſometimes dead to all appearance, it may be queſtioned whether they have any motion of thoſe parts which are requiſite to draw in freſh air in inſpiration. And this ſeems to be confirmed by the inſtance of a viper, which remained alive ſome days after the ſkin and moſt of the viſcera were ſeparated, and the lungs were not obſerved all that time to riſe or fall, as in inſpiration and expiration, but appeared equally extended with air; only as ſoon as it died the lungs fell. The ſtomach of this viper was empty, and ſo was that of the Rattle-Snake the Doctor diſſected, which for four months at leaſt had eat nothing; ſo that, though they can live a long time without food, air being neceſſary for their ſubſiſtance, they are provided with the receptacles abovementioned.

Another thing remarkable, which Dr. Tyſon took notice of in the diſſection of the Rattle-Snake, is, that the Oeſophagus, or gullet, which in moſt other animals ſerves only for tranſmiting the food into the ſtomach, ſeems in this to be intended by nature for ſomething more, and to be uſed on occaſion as a ſtomach or ſtomachs; for on blowing up the part, two large tumours were obſerved, nor was the true ſtomach capable of ſuch an extenſion. The Doctor takes theſe ſwellings in the gullet to do the office of the crop in birds, and of the paunch in quadrupeds, as being convenient receptacles for the food the ſtomach cannot well receive at once, and that the more neceſſary, as they feed but at one time of the year: and it is reported, that in caſe of danger the Rattle Snakes ſhelter their young in theſe receptacles.

The head of this ſnake is ſmall, but the Rictus, or mouth, is very large, its tongue in all reſpects like that of a viper, and compoſed of two long round bodies, joined together from the root two thirds of its length. They are darted out and retracted again with great agility; and the part that is exerted is black, whereas that which lies in the ſheath is red. To facilitate its exertion, the under jaw is divided for a conſiderable ſpace; for if it were conjoined, as in other animals, and beſet with teeth, they would be apt to injure the tongue, or at leaſt it might prove incommodious to the uſe it is deſigned for, which is ſuppoſed to be the catching of flies, and other ſmall animals it has a mind to devour. Over the tongue lies the Larynx, not formed with that variety of cartilages uſual in other creatures, but having a ſort of ſlit for receiving and diſcharging the air, which paſſing only through ſuch a ſlit, without other organs to modulate it, cauſes the hiſſing ſound emitted by the Rattle-Snake and other ſerpents.

The teeth are of two ſorts; firſt, the leſſer, which are ſeated in each jaw, and ſerve the Rattle Snakes for the catching and retaining their food; ſecondly, the poiſonous fangs which kill their prey: and they are all *Canini*, or dog-teeth; for as they neither chew nor bruiſe their food, but ſwallow it whole, they have no occaſion for *Molares*, or grinders. Of the firſt ſort of teeth there are in the lower jaw two rows on each ſide, and five in a row, the inward leſſer than the outward, and in all twenty: in the upper jaw are only ſixteen, five on each ſide placed backwards, and ſix before; and none of thoſe are poiſonous. The fatal fangs are placed without the upper jaw, towards the fore part of the mouth, not faſtened to the jaw bones, as the other teeth, but to the muſcles or tendons, except the two outermoſt and largeſt, which are fixed to a bone that may be taken for the ear-bone. Theſe fangs are not to be perceived on firſt opening the mouth, for they lie flat under a ſtrong membrane or ſheath *; but are to be erected upon occaſion. They are hooked, and in all of them, eſpecially the larger, there is a hole towards the root, and towards the point a very plain ſlit, from whence to the root they are perfectly hollow, as the Doctor diſcovered by gently preſſing the ſide of the gum with his finger; for then the poiſon roſe through the hollow of the teeth, and iſſued out at the ſlit. This poiſonous liquor is of a water-colour, lightly tinged with yellow.

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* Mr. Ranby, who diſſected the poiſonous apparatus of a Rattle-Snake, thinks the uſe of this membrane is to prevent the involuntary diſcharge of the poiſon out of the fangs. This gentleman in ſome particulars differs from Dr. Tyſon, but in general his obſervations agree very well with that ingenious anatomiſt.

Thus much may ſuffice for the deſcription and anatomy of the Rattle-Snake; for to give the remarks of Dr. Tyſon on every part of that animal would be unneceſſary and tedious to the generality of our readers. But it ſeems proper to add here a few miſcellaneous obſervations of Mr. Dudley, who ſays, there are three ſorts of this ſnake, diſtinguiſhed by their colour, viz. a yellowiſh green, a deep aſh-colour, and a black ſattin. Both men and beaſts, he aſſures us, are more afraid of a Rattle-Snake than of any other ſerpent, and the eye of this reptile has ſomething in it very ſingular and terrible. Whereas a common ſnake avoids a man, the Rattle-Snake never turns out of the way; but as he creeps with his head cloſe to the ground, and moves very ſlowly, a perſon may eaſily get out of his reach. His leaping and jumping to do miſchief is no more than extending or uncoiling himſelf; for in leaping they do not remove their whole body, as other animals do; ſo that a man is in no danger of them, if his diſtance be more than their length: nor can they do any harm when they are in their ordinary motion, till they firſt coil and then extend themſelves, which are both done in a moment's time. They are always coiled when they reſt or ſleep, and they are obſerved to be exceeding ſleepy.

The ſame author informs us, that theſe ſnakes make the greateſt rattling in fair and clear weather, and when it is rainy they make none at all; ſo that the Indians do not care to travel in the woods in time of rain, for fear of getting amongſt them before they are aware. Another circumſtance of their rattling has been obſerved, viz. that if a ſingle ſnake be ſurpriſed and rattles, and there be others near him, they all take the alarm, and rattle in like manner.

Their common food is toads, frogs, groundmice, crickets, graſhoppers, and other inſects; and the Rattle-Snakes themſelves ſerve for food to bears, and even hogs will eat them without harm. They are viviparous *, and generally bring forth about twelve; for a friend of Mr. Dudley informed him, that at the time when the Rattle-Snakes firſt come abroad, he took and opened one of them, and found in the Matrix twelve ſmall globes, as big as a common marble, in colour like the yolk of an egg. In three or four days more he took and opened another, and then plainly perceived a white ſpeck in the center of the yellow globe. Some

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* This is a confirmation of the Rattle-Snake's being of the viper-kind; for it is obſerved, that vipers bring forth their young alive, whereas common ſnakes lay their eggs in dunghills, or other places proper to hatch them by their warmth, and therefore are reckoned amongſt the oviparous animals.

days afterwards he diſſected a third, and diſcovered the head of a ſnake; and opening a fourth a few cays after that, he found three parts of a ſnake formed, and lying round in a coil. But what puts the matter out of doubt, about a month afterwards he killed a ſnake, and took out young ones about ſix inches long.

They caſt their ſkins every year, and generally den among the rocks in great numbers together. They retire on the approach of winter, and come abroad the beginning of next ſummer; at which time the hunters watch them, and, as they come out to ſun themſelves, kill them by hundreds.

Let us now conſider the ſurpriſing effects of the Rattle-Snake's poiſon, which is unqueſtionably one of the moſt ſubtile and dangerous in the whole animal kingdom. Of this we have ſome extraordinary inſtances given us by Capt. Hall, who being in South Carolina, procured a fine healthful Rattle-Snake, about four feet long, and with one Mr. Kidwell, a ſurgeon, and three or four other gentlemen, made ſeveral experiments to try the effects of its poiſon. They got three cur-dogs, the largeſt not bigger than a common harrier; and the ſnake being tied and pinned down to a graſs-plat, they took the largeſt of the dogs, and having tied a cord round his neck, ſo as not to ſtrangle him, the Captain held one end, and another perſon the other. Immediately on bringing the dog over the ſnake, he raiſed himſelf near two feet, and bit the dog as he was jumping. The dog yelped, by which the Captain perceived he was bitten; and pulling the dog to him as faſt as he could, he found his eyes fixed, his tongue between his teeth, which were cloſe, his lips drawn up ſo as to leave his teeth and gums bare; and, in ſhort, he was quite dead in a quarter of a minute. They could not ſee where the bite was, nor obſerve any blood; upon which ordering ſome hot water to ſcald the hair off, they diſcovered only one puncture, with a bluiſh-green colour appearing a little round it. This was juſt between his fore legs and his breaſt, where the hair was thinner than in ſome other places.

Half an hour after this they took a ſecond dog, which was ſomewhat ſmaller, and brought him in like manner over the ſnake, which bit his ear, ſo that all the company ſaw it. The dog yelped much, ſhewed ſigns of being very ſick, reeled and ſtaggered about for ſome time, then fell down and ſtruggled as if convulſed, and for two or three times got up, each time wagging his tail, though ſlowly, and endeavouring to follow a Negro-boy, who uſed to make much of him. They put him into a cloſet, and ordered the boy to look after him, who brought word in two hours that the dog was dead.

About an hour after the ſecond dog was bitten, they took the third in like manner, which the ſnake bit on the right ſide of the belly, ſo that he drew blood. The dog for about a minute did not ſeem to be hurt, ſo they let him go, and ſaw no more of him; but the next day a woman, who owned him, came to the Captain, complaining of his cruelty for killing her dog.

Four days afterwards they got two dogs, as big as common bull-dogs; and the firſt, which the ſnake bit on the inſide of his left thigh, died exactly in half a minute, according to the watches of two gentlemen preſent. There were two very ſmall punctures in his thigh, which looked livid, though no blood was drawn. The ſecond dog was bit about an hour after the firſt, on the outſide of his thigh, where they perceived blood at two places; he ſoon ſickened, and died in four minutes. As they thought the ſnake's poiſon was not ſpent, they got a cat, which he bit an hour after. She was very ſick, and they put her in a cloſet; but by ſome means or other ſhe got out, and the next morning was found dead in a garden.

A month after theſe experiments were made, the Captain procured a common black ſnake, not of the viper-kind, about two feet and a half long, and juſt taken; and putting this and the Rattle-Snake together, he irritated them ſo that they bit each other. He perceived that the black ſnake had drawn blood of the Rattle-Snake, before he took them aſunder; the black ſnake died in leſs than eight minutes, but the

Rattle-Snake did not ſeem ſick, or at all the worſe for his wound.

The laſt experiment the Captain made with this ſnake was to try whether his poiſon would not prove mortal to himſelf. In order to this he hanged him in ſuch a manner that he was not above half his length on the ground, and then ſo irritated him by pricking and ſcratching him with two needles faſtened to the end of a ſtick, that he ſoon bit himſelf, after having ſeveral times attempted to bite the ſtick. He then let him down, and he was quite dead in eight or ten minutes. The ſnake was then cut into five pieces, and given to a hog, the head-part firſt, in the ſight of ſeveral people. The hog eat up all the ſnake, and ten or twelve days afterwards the Captain ſaw the hog alive and healthful; which confirms the account of Mr. Dudley abovementioned.

We might give many other inſtances of the ſtrange effects of this ſubtile poiſon, but theſe are abundantly ſufficient. As to the cure of the bite of the Rattle-Snake, it is natural to think, that if death follows it in ſo ſhort a time, no remedy can reaſonably be expected: but why might not olive-oil, if immediately applied to the wound, be as certain a cure in this caſe, as it has been found to be for the bite of the viper, eſpecially as the Rattle-Snake is of that kind, and probably their poiſons much of the ſame nature? However, be this as it may, it is wiſely ordered by providence, that the countries infeſted by thoſe noxious animals produce effectual antidotes againſt their poiſons. Mr. Dudley ſays, there are ſeveral remedies for the bite of a Rattle-Snake, but that which is moſt made uſe of is a root called Blood-Root, on account, as he ſuppoſes, of its colour, as well as that of its juice, which is red like blood. It grows in great abundance in the woods, and the method of uſing it is to bruiſe it and bind it over the part that is bit, to prevent the poiſon ſpreading farther, at the ſame time ſcarifying the place affected. Some of the root is likewiſe boiled, and the patient drinks the water.

But here it will naturally be obſerved, that all this requires time, and a perſon bit by a Rattle-Snake in the woods, may be dead before the remedy can poſſibly be applied. It is true, the bite of the Rattle-Snake is for the moſt part attended by ſudden death, that is, death often enſues in fifteen minutes, and ſometimes ſooner, but at other times the patient lives ſeveral days: and there are various reaſons to be aſſigned, why the poiſon has not always the ſame ſpeedy effect, ſuch as the ſeaſon of the year, the part bit, and the conſtitution of the patient. However, if our accounts are true, the Americans are not without a ſpecific even againſt the moſt ſudden efforts of this dangerous poiſon, viz. the Serpentaria, or Snake-Root, of which there are various kinds, as that of Virginia, that of Braſil, that of Canada, &c. Thoſe who travel or hunt in the woods, carry this root conſtantly about them, to chew and ſwallow as ſoon as they are bit by a Rattle Snake, the ſtagnation of the blood being prevented by its peculiar activity. Nay, we are told, this root not only cures the bite of the Rattle-Snake, but that the animal flies at the ſmell thereof; for which reaſon travellers carry it with them on the end of a ſtaff, to preſent towards the ſnake if he chance to come in their way.

The account we have of the diſcovery of the virtue of this root in curing the bite of the Rattle-Snake is this. A nation of the Northern Indians, called Senekkas, obſerving that the root and flowers reſembled the rattle of the ſnake, concluded that providence had impreſſed that characteriſtic to point out its uſe. Theſe Indians returning from a war with a Southern nation, called Catawhaes, in the year 1712, communicated the efficacy of this root to a planter on the frontiers of Virginia, who imparted it to his neighbours, and ſo it was ſoon known through thoſe parts of America. And hence a particular ſpecies is named Senekka Rattle-Snake Root, to diſtinguiſh it from other ſpecies which are much inferior in virtue.

After all, ſo ſpeedy are the terrible effects of this ſnake's poiſon in many inſtances *, that it

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* To the inſtances already given of the ſtrength and virulence of this poiſon on animals, let us add another

it is the opinion of Capt. Hall, a judicious and obſervant perſon, who lived ſeveral years in Virginia, that the ſafeſt and ſureſt way of cure is to cut out immediately the part where the wound is made; for he has ſeen ſeveral, who, following that method upon being bit, have carried hollow ſcars about them, as marks of the narrow eſcape they had had, and they never felt any inconvenience afterwards.

But though we have ſaid ſo much of the Rattle-Snake, we have not yet done with that animal; for beſides the ſurpriſing effects of its poiſon, there are others attributed to its eyes almoſt equally aſtoniſhing, which ought not to be paſſed over in ſilence. The effects that we mean are ſaid to be produced by a certain faſcinating or bewitching power in the eyes of the Rattle-Snake, which, by keeping them fixed on any ſmall animal, as a ſquirrel, a bird, or the like, though ſitting on the branch of a tree, at

another of the ſame on a vegetable body, which is mentioned by Col. Beverly, who ſays he was informed by Col. Taylor, that being in company with others in the woods, they found a Rattle-Snake, and cut off his head. Then with a green ſtick which he had in his hand, about eighteen inches long, the bark of which was newly peeled off, he urged and provoked the head, till it bit the ſtick with fury ſeveral times; whereupon the Colonel obſerving ſmall green ſtreaks riſe up along the ſtick towards his hand, he threw it on the ground, and in a quarter of an hour it ſplit into ſeveral pieces, and fell aſunder from end to end.

a conſiderable height, can draw ſuch animal down into its mouth. This perhaps may ſeem utterly incredible to people who have never heard or conſidered any accounts of this nature; but it is commonly aſſerted that all ſorts of ſnakes have ſome degree of this faculty of charming or faſcinating other animals by looking ſtedfaſtly upon them. Mr. Dudley ſays, he will not pretend to anſwer for every ſtory he has heard concerning this power of faſcination, but he is abundantly ſatisfied from ſeveral witneſſes, both Engliſh and Indian, that the Rattle-Snake can charm birds and ſquirrels from a tree into his mouth. Our author was told by one of undoubted veracity, that as he was in the woods, he obſerved a ſquirrel in great diſtreſs, ſkipping from one bow to another; and making a lamentable noiſe, till at laſt he came down the tree, and ran behind a log. The perſon going to ſee what was become of the ſquirrel, ſpied a large ſnake that had ſwallowed him. And Mr. Dudley is the rather confirmed in this relation, becauſe his own brother being in the woods, opened a Rattle-Snake, and found two ſquirrels in his belly, both of them head foremoſt. He adds, that when they charm, they make a hoarſe noiſe with their mouths, and a ſoft rattle with their tails, having their eyes at the ſame time earneſtly fixed on their prey.

Col. Beverly tells us, that as he was hunting in the woods, and had ſtrayed from his companions, he was entertained at his return with an account of a pleaſant rencounter between a dog and a Rattle-Snake about a ſquirrel. The ſnake had got the head and ſhoulders of the ſquirrel into his mouth, which being ſomething too large for his throat, it took him up ſome time to moiſten the furr of the ſquirrel with his ſpawl, to make it ſlip down. The dog took this advantage, ſeized the hinder parts of the ſquirrel, and tugged with all his might. The ſnake on the other ſide would not let go his hold for a long time, but at laſt gave up his prey, and the dog eat the ſquirrel without any injury.

The ſame gentleman aſſures us, that ſeveral perſons have ſeen ſquirrels run down a tree directly into a ſnake's mouth; and have alſo ſeen birds fluttering up and down, and chattering at theſe ſnakes, till at laſt they dropped down before them. But, beſides the relations of others, he gives a very remarkable inſtance of this faſcination, whereof he himſelf was an eye-witneſs, with two other perſons in company. Having ſtopped at an orchard by the ſide of the road, they were entertained, he tells us, with the whole proceſs of a charm between a Rattle-Snake and a hare, the hare being better than half grown. It happened thus: One of the company, ſearching for the beſt cherries, ſpied the hare ſitting, and though he went cloſe by her, ſhe did not move, till he, not ſuſpecting the occaſion of her tameneſs, gave her a laſh with his whip; upon which ſhe ran three or four yards, and there ſat down again. The gentleman, not finding the fruit ripe, immediately returned the ſame way; and near the place where he ſtruck the hare, he ſpied a Rattle-Snake. Still not ſuſpecting the charm, he went back about twenty yards to a hedge, to get a ſtick to kill the ſnake; and at his return he found the ſnake removed and coiled in the ſame place from whence he had moved the hare. This put him into the thought of looking for the hare again, and he ſoon ſpied her about ten feet diſtant from the ſnake, in the place to which ſhe had ſtarted when he whipped her. She was now lying down, but would ſometimes raiſe herſelf on her fore feet, ſtruggling as it were for life, to get away, but could never raiſe her hinder parts from the ground; and then ſhe would fall flat on her ſide again, panting vehemently. The hare and ſnake were in this condition when our author was called, who ſays, that though all three went within five yards of the ſnake to have a full view of the whole, the ſnake did not take the leaſt notice of them, nor ſo much as give a glance towards them. There they ſtood at leaſt half an hour, the ſnake not altering one jot; but the hare often ſtruggled to get up, and fell on its ſide again, till at laſt ſhe lay ſtill for ſome time as dead. Then the ſnake moved out of his coil, and ſlid gently and ſmoothly towards the hare, his colours at that inſtant being ten times more glorious and ſhining than at other times. As the ſnake moved along, the hare happened to make another ſtruggle; upon which the ſnake made a ſtop, lying at his length till the hare was quiet, and then he advanced till he came up to the hare's hinder parts, which in all this proceſs had been towards the ſnake. There he ſurveyed the hare all over, raiſing part of his body above it; then he turned off and went to the noſe, and after that to the ears, which he took into his mouth one after the other, working them as a man does a wafer to moiſten it. He then returned to the noſe, and took the face into his mouth, ſtraining and gathering his lips, ſometimes on one ſide, ſometimes on the other. At the ſhoulders he was a long time puzzled, often pulling and ſtretching the hare out at length, till at laſt he got the whole body into his throat. The ſpectators then advanced, and our author taking the twiſt-band off his hat, made a nooſe, and put it about the neck of the ſnake. This at laſt made him very furious; but having ſecured him, they put him into one end of a wallet, and carried him on horſeback five miles to the houſe where they lodged that night; and next morning they killed him, and took the hare out of his belly. The head of the hare began to be digeſted, and the hair to fall off, having lain in the ſnake's belly about eighteen hours.

Here ſeems to be a plain inſtance of the faſcinating or enchanting power in the Rattle-Snake; but Sir Hans Sloane thinks the whole myſtery of the affair is chiefly this, that when ſuch animals, as are the proper prey of theſe ſnakes, as ſmall quadrupeds, birds, &c. are ſurpriſed by them, they give them a bite, and the poiſon allows them time to run a ſmall way, or perhaps a bird to fly up into the next tree, where the ſnakes watch them with great earneſtneſs till they fall down, or are perfectly dead, when having licked them over with their ſpawl or ſpittle, they ſwallow them down.

Now we grant that Sir Hans's conjecture is natural enough, and perhaps the hare abovementioned might have been ſurpriſed and bit by the Rattle-Snake, before it was affected in ſuch a manner: but ſtill there are many inſtances of what we call faſcination, not only in the Rattle-Snake, but in other animals, where no previous bite or other injury has been received by the animal enchanted. Dr. Sprengell's account ſeems to be ſuch an inſtance, who tells us, that at Milan he met with a viper-catcher who generally kept a conſiderable number of theſe animals alive in a back room, open at top; and having one day got a female viper big with young, a mouſe was thrown in amongſt them; but of the whole number of vipers, which were upwards of ſixty, not one concerned himſelf in the leaſt about the mouſe, till the pregnant female viper and the mouſe interchanged eyes, as the Doctor expreſſes it. Upon this the mouſe ſtartled; but the viper raiſed her head, and turned her neck into a perfect bow, her mouth open, her tongue playing, her eyes all on ſire, and her tail erect. The mouſe ſeemed ſoon recovered of its fright, and would take a turn or two, ſometimes more, pretty briſkly round the viper, giving now and then a ſqueak, till at laſt it ran ſwiftly into the chops of the viper, and gradually ſunk down the gullet. All this while, adds the Doctor, the viper never ſtirred out of her place.

If this be not ſufficient to prove the faſcinating power of ſome animals, take another inſtance from a late author, who aſſures us he has ſeen a mouſe running round a large toad, which ſtood looking earneſtly at it, with its mouth open. Still the mouſe made leſs and leſs circles about the toad, crying all the while, as if compelled thereto; and at laſt, with a great deal of ſeeming reluctance, ran into the gaping mouth, and was ſwallowed.

Something of this kind almoſt every one may have obſerved in the ſetting-dog, the effects of whoſe eye on the partridge are very remarkable. The poor bird, when once its eyes meet thoſe of the dog, ſtands as if confounded, regardleſs of itſelf, and eaſily lets the net be drawn over it. And we have read of ſquirrels ſo ſtupified and overcome by a dog's ſtaring hard at them, that they have dropped from the tree into his mouth.

Add to this, that man is not ſecure from the like affections, as almoſt every one knows from experience; for there are few people but have one time or other felt the effects of an angry, a fierce, a commanding, a diſdainful, a laſcivious, an intreating eye, &c.

But ſince we have in ſome meaſure taken upon us to plead for the opinion of the faſcinating power of the eye, let us ſee how far it can be ſupported by philoſophy, in which we apprehend it has ſome foundation. All living things, we know, emit effluvia, both by the breath and pores of the ſkin, and therefore all bodies within the ſphere of thoſe effluvia will be affected by them, in this or that manner, according to the quality of the effluvia, and in this or that degree, according to the diſpoſition of the emittent and recipient parts. Thus far is inconteſtable; nor need we produce inſtances of animals exhaling ſweet or ſtinking ſmells, or of infectious diſeaſes conveyed by effluvia, in confirmation of what we have aſſerted. If then what we have advanced be granted, we know that of all parts of an animal body the eye is the quickeſt, moving with the greateſt celerity, and in all the variety of directions; and from the rays of light it ſo copiouſly receives, we may ſafely conclude that its coats and humours are as permeable as any other part of the body. The eye, therefore, undoubtedly emits its effluvia like the other parts, and the fine humours muſt be continually exhaling. The heat of the pervading rays will rarefy and attenuate them, and that, with the ſubtile juice or ſpirit of the neighbouring optic nerve, ſupplied in great abundance by the vicinity of the brain, muſt make a fund of volatile matter, to be diſpenſed, and as it were determined by the eye.

Here then, obſerves an ingenious author, we have both the dart and the hand to fling it; the one furniſhed with all the force and vehemence, and the other with all the ſharpneſs and activity one could require. Conceive therefore the eye as a ſling, capable of the intenſeſt motions and vibrations, and communicating with a ſource of ſuch matter as the nervous juice elaborated in the brain, a matter ſo extremely ſubtil and penetrating, that it is ſuppoſed to fly inſtantaneouſly through the ſolid capillements of the nerves, and ſo active and forcible that it diſtends and convulſes the muſcles, diſtorts the limbs, and alters the whole habit of body, giving motion to a maſs of inactive matter. A projectile of ſuch a nature, flung by an engine like the eye, muſt have an effect wherever it ſtrikes; and the effect will be limited and modified by the circumſtances of diſtance, the impetus of the eye, the quality, ſubtilty, acrimony, &c. of the juices, and the delicacy, coarſeneſs, &c. of the object to which it is directed.

This theory, we imagine, may account for ſome of the phænomena of witchcraft, particularly of that branch we are ſpeaking of, called Faſcination. It is certain the eye has always been eſteemed the chief ſeat, or rather the organ of witchcraft, though without conſidering the reaſon; the effect was apparently owing to the eye, but in what manner it was done, was not conſidered or dreamed of. Thus the phraſe, to have an *evil Eye*, implies ſomething

thing of witchcraft *: and we may obſerve, that old bilious perſons are moſt frequently ſuppoſed to have this faculty, the nervous parts in them being depraved, and irritated by a vicious habitude of body, and ſo rendered more penetrating and malignant. It is likewiſe to be remarked, that children and young people are moſtly affected by it, their pores being more open, their juices incoherent, and their fibres delicate and ſuſceptible of impreſſions. Laſtly, the faculty is only exerciſed when the perſon is diſpleaſed, provoked, &c. it requiring ſome extraordinary ſtreſs and emotion of mind to dart a proper quantity of the effluvia, with a ſufficient force to produce the effect at a diſtance.

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* Hence that verſe of Virgil: *Neſcio quis teneros oculus mihi faſcinat agnos.*

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VEGETABLES.

OF the vegetable productions of America, there is none more juſtly celebrated than the tree generally called *Quinquinia* by botaniſts, and *Cinchona*, by Linnæus. It is alſo called Feverwood, on account of its bark, which is a celebrated ſebrifuge, removing all kinds of intermitting fevers and agues, and is commonly called the *Jeſuits Bark*. The tree that produces this noble ſpecific grows only in the inland parts of Peru, on the mountains near Loja, or Loxa, in the province of Quito; at leaſt the beſt ſort, for there are different ſpecies of this tree, is no where elſe to be found, according to the account of Mr. Arrot. It is a pretty tall tree, and has a trunk rather bigger than a man's thigh, tapering from the root upwards, and free from branches till near the top, where they ſhoot out as regularly as if they were lopped, forming with the leaves the figure of a hemiſphere. The bark is of a blackiſh colour on the outſide, and ſometimes mixed with white ſpots, from whence commonly grows a kind of moſs, which the Spaniards call Barbas. Its leaves are much like thoſe of our plum-tree, of a darkiſh green colour on the upper ſide, and reddiſh on the lower. It bears a red flower, which is ſucceeded by a ſort of pod, incloſing a ſeed ſomewhat like a hop-ſeed; though Dr. Oliver repreſents its fruit as reſembling a cheſnut. The ſoil where the beſt ſort thrives is generally a reddiſh earth or rocky ground, and frequently on the banks of the rivulets that fall from the mountains. Mr. Arrot adds, that it flouriſhes and bears fruit at the ſame time all the year round.

The Bark-trees do not grow together in great numbers, but are intermixed with others in the woods. Sometimes indeed it happens that cluſters of them are found together, but at preſent they are much ſcarcer than in former times, a great many fine large ones having been entirely cut down, in order to come at the bark the more eaſily. The propereſt ſeaſon for cutting the bark is from September to November, the only time in the year that there is ſome intermiſſion from rain in the mountains. Having diſcovered a ſpot where the trees moſt abound, the workmen build huts near it for themſelves, and a large hut to put the bark in, to preſerve it from the wet: but they remove it from hence as ſoon as poſſible to the neareſt plantation or farm-houſe in the low-country to dry, which is done by ſpreading it abroad in the open air, and turning it frequently. The Indians, who are the cutters, are each provided with a large knife, and a bag that will hold about fifty pounds of green bark. Two of them take one tree, from whence they cut or ſlice down the bark as far as they can reach from the ground; and then taking ſticks about half a yard long, they tie them to the tree with tough withs at proper diſtances like the ſteps of a ladder, always ſlicing off the bark as far as they can reach, before they fix a new ſtep. Thus they mount to the top, the Indian below gathering what the other cuts; and this they do by turns, going from tree to tree, till their bag is full; which, when there is plenty of trees, is generally a day's work for one Indian. Our author tells us, that after a tree is ſtripped of its bark, it requires eighteen or twenty years to grow again; which is quite different from Dr. Oliver's account, who ſays, it grows again in four months.*

Mr. Arrot had the curioſity to ſend a conſiderable quantity of bark from the woods to the city of Loxa, where he put it into a large open houſe, and dried it under cover, never expoſing it either to the ſun or the air of the night; imagining that the ſun exhaled many of its fine parts, and that the night-air was very pernicious to it: but he found the colour of the bark, thus cured, not near ſo bright and lively as that dried in the open air. This beſt ſort of bark, he imagines, will laſt but a ſhort time, or at leaſt it will be extremely hard to be got, by reaſon of its diſtance from inhabited places, the impenetrability of the woods where it grows, and the ſmall number of Indians to cut it, who by the cruel uſage of the Spaniards are daily diminiſhing, and in a few years will perhaps be extirpated out of that country.

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* Dr. Oliver had his account of the bark tree from an apothecary at Cadiz, who had been in Peru; but Mr. Arrot relates what he himſelf had obſerved and been told whilſt he lived in that country. Who is moſt to be credited, we leave to the reader's judgment.

It is not certain how the qualities and uſe of this remarkable bark came firſt to be known, but it is the common opinion at Loxa that they were known to the Indians before ever the Spaniards came amongſt them; and that it was by them applied in the cure of intermitting fevers, which are frequent in thoſe wet parts of Peru. According to the account of the Spaniards, however, the virtues of the Peruvian bark were diſcovered in the following manner. Near the town of Loxa, ſay they, was a lake ſurrounded with Quinquina trees, which being blown down or accidentally thrown into the lake, communicated a bitter taſte to the water, ſo that the inhabitants, who uſed to drink it, could uſe it no longer. But a certain Indian, who had a violent fever upon him, and conſequently an intenſe thirſt, finding no other water, was forced to drink of this, by which he was perfectly cured. He related this accident to ſome of his neighbours, and ſeveral perſons afflicted with fevers made the ſame experiment with the ſame ſucceſs. Upon this they ſet themſelves to diſcover what had given this febrifugous quality to the water of the lake; and found in the firſt place that a great number of trees had fallen into it; and ſecondly, that in a courſe of years theſe trees being rotted in the water, it loſt its bitter taſte, and at the ſame time its virtue; whence they concluded,

cluded, that its quality was owing to the trees. Then they infuſed all the parts of theſe trees in water, and found that their whole efficacy reſided in the bark. This medicine, however, remained a ſecret to the Spaniards, till the year 1640, when it was diſcovered by a ſoldier, who by its means had the good fortune to cure the vice-queen of Peru of an intermittent fever, which had baffled the ſkill of her phyſicians. From this time the Spaniards began to uſe it with wonderful ſucceſs; and in 1649 Father de Lugo, a jeſuit, then procurator general of his order, and afterwards cardinal, brought it to Rome; upon which the ſociety of Jeſuits ſoon raiſed its reputation in Europe, and got a great deal of money in a ſhort time, ſelling it for more than its weight in gold, and never parting with it but in powder, in order to diſguiſe it the better. At this juncture the phyſicians were divided with reſpect to the Peruvian bark, ſome looking on it as a divine medicine, whilſt others believed it dangerous, and even fatal in many caſes; but its reputation was only loſt through the ignorance of the manner of preparing and preſcribing it; for about the year 1679, Mr. Talbot, an Engliſh phyſician, brought it into vogue, by the great number of cures he wrought about the court and city of Paris, with the powder prepared after his manner; the ſecret whereof was afterwards made public, by the munificence of Louis XIV. who rewarded Talbot for the communication with five thouſand crowns.

The reputation indeed, which this medicine has univerſally obtained, has been chiefly owing to the judicious and ſucceſsful experiments made by the Engliſh phyſicians: but it ſtill has its enemies, who pretend that it brings on violent relapſes, or new and incurable diſeaſes; ſuch as cachexies, tumours of the feet, dropſies, obſtinate coſtiveneſs, oppreſſion of the Præcordia, hypocondriac and hyſteric diſorders, ſlow and hectic fevers, accompanied with a loſs of ſtrength and appetite, and ſometimes convulſions and epilepſies in children.

Baglivi affirms, that fevers cured by the bark return in a few days, or are ſucceeded by aſthma's, dropſies, ſlow fevers, conſumptions, or other dangerous diſorders. And indeed many learned and eminent phyſicians object againſt the bark, that its aſtringent and corroborating qualities ſuſpend the febrile commotions, which do not remove the intermittents, but induce relapſes, and perhaps more terrible diſorders. But it is certain, that the Peruvian bark, exhibited duly and in conjunction with other ſuitable remedies, has a tendency to remove the cauſes of fevers by promoting perſpiration, and reſtoring the due tone of the ſolids. Beſides, ſays Dr. James, the bark is poſſeſſed of a bitter quality, which is univerſally allowed to be a remedy for fevers, ſince almoſt all bitters, ſuch as wormwood, carduus benedictus, fumitory, the leſſer centaury, and others of a like nature, are eſteemed excellent febrifuges. It is to be obſerved, however,

ever, that before the humours and Viſcera are generally diſpoſed to theſe diſeaſes, the bad humours of the patient may probably contribute to their production. Beſides, it is ſufficiently evident, that the moſt efficacious remedies, ſuch as veneſection, purgatives, emetics, and opiates, if uſed without judgment, are equally pernicious and fatal; ſo that the bark, though ſometimes a dangerous remedy in fevers and other diſtempers, eſpecially in the hands of an ignorant phyſician, is a ſafe and efficacious remedy when properly applied. And indeed the bad effects of it do not proceed from the medicine itſelf, but are to be attributed to the improper uſe of it, the errors of the patient, or ſome neglect in removing the peccant humours of the *Prima Viæ*, which ought by all means to be removed before the bark is adminiſtered. Neither ſhould the bark be preſcribed if the Viſcera are obſtructed with bad humours, before thoſe obſtructions are removed; nor is the cure of intermittent fevers to be undertaken with the bark in plethoric or hypocondriac patients, or when critical evacuations of blood are ſuppreſſed. Caution is likewiſe neceſſary if the patients to whom this febrifuge is given have their ſtrength and blood exhauſted, if they are liable to exorbitant paſſions, or if their diſorder approaches to a continual hectic or ſlow fever. If alſo the urine is limpid and without ſediment, if the Hypocondria are tumid, or an autumnal or winter fever has been long protracted, great diſcretion is likewiſe to be uſed; for in ſuch caſes it is beſt to moderate the febrile commotions by gently evacuating and corroborating medicine, till the fits ſpontaneouſly ceaſe, either by change of place, a more exact regimen, or the influence of a warm and ſerene air. As to the form, ſays Dr. James, it is moſt commodiouſly given in ſubſtance in a proper vehicle, without any addition; but if the ſtomach nauſeate it in this form, there are various methods of preparing it in a more agreeable manner. After all, it ought never to be given in large quantities, but rather at ſeveral times, one or two ſcruples only on the intercalary day, every three hours after the fit, drinking after it a ſufficient quantity of water, broth, or beer. Beſides the peculiar febrifuge quality of the bark, it is of great ſervice in ſtopping the progreſs and perfecting the cure of gangrenes and mortifications.

This noble medicine is ſold either in bark or in powder. If bought in the bark, it muſt be choſen dry and compact, ſuch as has never been damaged by wet, and is not too eaſily reduced into powder by breaking. The ſmall blackiſh barks, ſhagreened without, and reddiſh within, of a bitter diſagreeable taſte, are the moſt eſteemed. But this little ſort, which curls up like ſticks of cinnamon, and is ſuppoſed to be peeled off the branches, Mr. Arrot tells us is only the bark of the younger trees, which twiſts up in that manner on account of its thinneſs; for he ſays the bark of the branches would not anſwer the trouble and expence of cutting.

As to the powder, it ought to be well ſifted, and bought of perſons that may be truſted, it being ſophiſticated, and the cheat not readily diſcovered.

There is another bark, called Winter's bark, or Winter's cinnamon, becauſe brought by Captain Winter from the ſtreights of Magellan, where the tree grows in great abundance: but it is to be obſerved, that the wild cinnamon ſold in the ſhops is not the true *Cortex Winteranus*, though paſſed off under that name. There are barks of different trees, growing in very diſtant places, by outward appearance ſeeming quite different from each other, and even alike with regard to taſte, ſo that they may be uſed as a Succedaneum to each other; but the true Winter's bark is much to be valued beyond the falſe, which is generally ſold in the ſhops, being far more aromatic. It is reſolvent, diſcutient, and ſub-aſtringent; on which account it is ſucceſsfully adminiſtered in diſorders of the ſtomach, crudities, nauſeas, diarrhœas, and exceſſive vomitings. To ſtrengthen the ſtomach it is likewiſe uſed in the declenſion and at the end of intermittent fevers; and it is reckoned beneficial to ſcorbutic patients.

We ought not to omit another excellent root growing plentifully in Brazil and Peru, namely, Sarſaparilla, which began to be much celebrated about the ſame time with the China root, as appears from an epiſtle of Veſalius. The root divides itſelf into a great number of filaments, ſix or ſeven feet long, browniſh without, and white within, only marked with two red ſtreaks; and its branches creep along the ground, or up the trunks of other trees like ivy. Its chief uſe is in decoctions and potions for the venereal diſeaſe, and in ſome caſes it is reckoned to exceed guaiacum itſelf, eſpecially when the patient is afflicted with rheumatic pains, owing their original to the venereal infection. It is prepared by cutting two ounces of the root into ſmall bits, and macerating them a whole day in ſix pints of water; which are afterwards to be boiled over a gentle fire, in a double veſſel well cloſed with a lid, till one third or one half be evaporated. Of this decoction the patient is to take a glaſs that will hold ten ounces, very early in bed, and the courſe is to be continued for twenty or four and twenty days.

In the ſouthern parts of America we find ſeveral trees which furniſh us with healing medicines, particularly the Peruvian balſam. Of this there are two kinds, the white and the black; but the former is accounted beſt, and is by way of eminence called Balſam of Inciſion, becauſe flowing from a large tree upon making inciſions in the bark. This ſpecies is limpid, of the conſiſtence of turpentine, of a fragrant ſmell, and much ſcarcer and dearer than the black ſort; but it is frequently adulterated with Venice turpentine. We have large quantities of the black ſort imported, which is prepared by boiling the branches, bark, and leaves of the trees; but this is likewiſe often adulterated, which however may be known by its being thick and coagulated, and wanting its penetrating taſte and ſmell. The true balſam of Peru, if uſed internally, reſtores loſt and impaired ſtrength, and being very friendly to the nervous ſyſtem, powerfully contributes to remove the diſorders ariſing from its weakneſs. The black Peruvian balſam, according to Geoffrey, is alſo of a warming and ſtrengthening nature, comforting the brain and nerves; and it is beneficial in aſthmas, the cholic, and pains of the ſtomach and inteſtines. Uſed externally it alleviates the cramp, relieves all kinds of convulſions, old achs and pains, and contractions of the ſinews. In cuts and green wounds it is alſo ſerviceable.

The balſam of Capivi is produced from a tree growing in Brazil, and brought to us from Rio de Janeiro and other places in earthen veſſels. There are two ſorts of it, the one very limpid, the other pretty thick; but the difference depends upon the different ſeaſons of gathering it. Hoffman eſteems the limpid kind both for internal and external purpoſes, it being an excellent liniment for the conſolidation of wounds and ulcers, and for ſtrengthening the nervous parts after they have been weakened by any diſeaſe. It is alſo beneficial when applied to parts that have been affected with the gout, and thereby rendered unfit for motion.

This balſam is uſed by the Jews to ſtop the blood after circumciſion.

To theſe we may add the balſam of Tolu, the produce of a tree growing in Terra Firma, of a tough reſinous conſiſtence, of a yellowiſh colour, of an highly fragrant ſmell, and aromatic taſte. This is an excellent pectoral medicine, and conſequently of great ſervice in all diſorders of the lungs, as coughs, aſthmas, and conſumptions; and what renders it ſtill more valuable is, that it has no nauſeous oily taſte, which is the caſe of moſt other native balſams. With ſugar and the yolk of an egg it makes an agreeable emulſion; and it is reckoned reſtorative if taken inwardly, and deterges and conſolidates wounds if applied externally. It ſtrengthens the nerves, and is good againſt a rheumatiſm and ſciataca. In taſte and ſmell it reſembles the Balm of Gilead, and as it grows old it becomes friable, and aſſumes the conſiſtence of a dry balſam.

There is ſtill to be mentioned a very celebrated plant of the ſhrub kind growing in ſome parts of South America, eſpecially Paraguay, by which name it is called, though better known amongſt us under the denomination of South-Sea tea. Its uſual height is about a foot and a half, its branches are very ſlender, and its leaves like thoſe of Sena. It may be looked upon indeed as a ſort of occidental tea, which, like the oriental, is infuſed in hot water, and communicates to it a colour and ſmell nearly like thoſe of the beſt tea brought from the Eaſt Indies.

Of this plant there are two kinds, the one called Paraguay, the other Camini, which laſt is moſt eſteemed, and ſold for a third more than the other. The firſt is chiefly uſed by domeſtics and ſlaves, but the latter is the drink of the richeſt people; and both are of ſo much uſe, and eſteemed of ſuch neceſſity, that nobody in that part of America will live without them.

In the mines of Potoſi, as we have already obſerved, the poor ſlaves could not live without a conſtant ſupply of Paraguay, which is their remedy againſt the mineral ſteams that otherwiſe would ſuffocate them; and it is ſaid that no ſervant will engage himſelf with a maſter but on condition that he have Paraguay for his uſual drink.

This plant makes a very conſiderable article in the commerce of that part of the world, and paſſes almoſt wholly through the hands of the Jeſuits. The uſe of it began once to obtain in England, and ſeemed to be approved of as well as tea; but of late years it has not been much regarded. The preparation of it, and the making of it into drink, is much the ſame with that of tea, except that both the leaves and wood are uſed, and the liquor drank immediately out of the veſſel it is made in, which the company ſuck through a ſilver or glaſs tube, handed round from one to another.

It is farther to be obſerved, that beſides the virtues of the eaſtern tea, the Americans attribute another to theirs, viz. that of purifying all kinds of water, how foul and corrupt ſoever; ſo that in the deſerts they croſs from Buenos Ayres to Peru and Chili, they mak uſe of it to ſweeten the bad water they meet with, and drink it without any injury. In the ſcurvy and putrid fevers it is alſo reckoned a ſovereign remedy.

Nor ſhould we forget the American wood called Brazil, commonly ſuppoſed to have had its name from that country, though Huet ſhews it was known many years before Brazil was diſcovered. It is variouſly denominated, according to the places whence it is brought, as Fernambuco, Japan, the Antilles, &c. but it always grows in a dry barren ſoil, and even in the middle of rocks. The tree is tall, uſually crooked and knotty, and has a bark of a ſurprizing thickneſs. It bears flowers of a very beautiful red, which ſmell agreeably, and are ſaid to ſtrengthen the brain. The wood itſelf is very heavy, crackles much in the fire,

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and ſcarce raiſes any ſmoke, by reaſon of its extreme dryneſs. That of Fernambuco is eſteemed the beſt, and is to be choſen in thick pieces, cloſe, ſound, and ſuch as being chewed taſtes ſomething like ſugar. It takes a good poliſh, and is much uſed in turned works, but more frequently in dying, as it gives a red colour, though none of the moſt laſting. In medicine it is reckoned to mitigate the heat of fevers, and is ſtrengthening and reſtringent.

Many more productions of the vegetable kind in this part of the world are very remarkable, particularly a large prickly ſhrub, as thick as a man's leg, and growing to the height of ten or twelve feet, but bearing neither leaf nor fruit.

The Mammee is a tall ſtrait-bodied tree, without knots or limbs for ſixty or ſeventy feet, but afterwards ſpreading into ſeveral ſmall branches, growing thick and cloſe together. Its bark is of a dark-grey colour, thick and rough; its fruit bigger than a quince, round, and covered with a thick rind. When the fruit is ripe the rind is yellow, and will peel off like leather, but before it is brittle. Under the rind the pulp is alſo yellow, and in the middle are two large ſtones, flattiſh, and each of them much bigger than an almond. The fruit ſmells well, and the taſte is not diſagreeable.

In Terra Firma there are ſeveral ſorts of Mangrove trees, beſides thoſe which we have mentioned in Africa. They are black, red, and white, the firſt of which is largeſt, being as big as many of our oaks, and to the height of about twenty feet very ſerviceable timber, but extraordinary heavy, and therefore not much uſed in building.

The red Mangrove grows commonly by the ſea-ſide, or by creeks and rivers, and proceeds from everal roots, which about eight or ten feet from the ground join into one trunk or body, ſo that the tree ſeems to be ſupported by ſo many artificial ſtakes. The inſide of the bark is red, and is much uſed in the Weſt Indies for tanning of leather.

The white Mangrove does not grow ſo large as the other ſort, nor is it of any great uſe.

We ſhall conclude this article with a deſcription of a very uſeful tree, viz. the Cacao or chocolate nut-tree, which is found in ſeveral parts of the Weſt-Indies, but no where ſo plentifully as on the coaſt of the Carracas. This tree nearly reſembles our dwarf apple-tree both in body and branches; but the leaf, which is of a deep green, is conſiderably broader and longer. The nuts, which are of the colour and about the ſize of an almond, hang fifteen or ſixteen together by a ſmall ſtringy film; incloſed in a pod ſhaped like a large cucumber,

cumber, and pointed at the upper end. When the pod is ripe it is of a beautiful yellow colour, intermixed with blood-red ſtreaks; but when dried it ſhrivels up, and turns to a deep brown. The juice expreſſed from the mucilaginous pulp contained in the huſk of theſe nuts reſembles cream, and is poſſeſſed of a grateful taſte and cordial quality; and the nuts themſelves are ſaid to be ſo nutritive, that an ounce of them contains more real nouriſhment than a whole pound of beef. The tree is difficult to cultivate, and the climate it grows in ſo warm, that, to guard it from the ſun, it is planted in the ſhade of another tree, called Mother of Cacao; and the profit ariſing from the fruit is ſo conſiderable, that we are told ſome of the Spaniards make five thouſand pounds ſterling per annum from one plantation of Cacao's.

In ſome parts of America the nuts are uſed by the natives as money, twelve or fourteen being eſteemed equivalent to a Spaniſh Real, or about ſeven pence ſterling.

What renders the cacao-nut moſt famous, is its being the principal ingredient in chocolate, a factitious ſubſtance firſt brought from America into Europe by the Spaniards about the beginning of the laſt century. Some diſſolve this ſubſtance in water, others in milk, and others in wine; but water ſeems to be the beſt vehicle for it, as the moſt proper to diſtribute its nutritive parts, and to promote digeſtion,

geſtion. The compoſition of chocolate makes it chiefly proper for perſons of cold conſtitutions, for old people, for thoſe who have their ſtrength impaired by repeated watchings, and for thoſe who travel in cold mornings. As it is of an oily and tenacious nature, Dr. Cheyne, thinks it ſhould not be uſed by the weak and infirm, either as an aliment or a medicine; but he grants that it may produce all the effects of a ſalutary food in vigorous and ſtrong conſtitutions. It is confirmed by the experience of many phyſicians, that in hectic, ſcorbutic, and catarrhous diſorders, chocolate is a wonderful remedy, having wrought a cure when all other means have proved ineffectual: and Hoffman affirms, that chocolate prepared with water contributes much to the cure of melancholic diſorders, ariſing from too weak and lax a ſtate of the nerves, eſpecially if we add to it a few drops of eſſence of amber. Dr. Stubbs, in the Philoſophical Tranſactions, affirms, and Dr. James is of the ſame opinion, that well-prepared chocolate is an excellent diet for thoſe who are ſcorbutic, afflicted with the ſtone or arthritic pains, and to prevent convulſions; and yet ſome of the beſt phyſicians have obſerved, that drinking chocolate to exceſs contributes to the formation of ſtones, eſpecially in the gall-bladder. It is agreed, however, that a man in perfect health may drink as much chocolate as he has an appetite for, provided he finds himſelf refreſhed, and his ſtomach not overloaded. In hot and ſanguine conſtitutions the immoderate uſe of this liquor, by inſpiſſating the blood, and rendering it leſs fit for circulation, produces inflammations of the Viſcera, fevers, and apoplexies. On account of the quantity of ſugar that enters the compoſition of chocolate, it ought to be avoided by thoſe who are ſubject to hypocondriac flatulencies; and the diſadvantages ariſing from the immoderate uſe of this drink, conſidered as prepared with warm water, are plain to every one who reflects, that the frequent uſe of warm water relaxes the organs of digeſtion, and the ſolids in general, and muſt conſequently prove pernicious.

The method of making chocolate, now uſed by the Spaniards in America, is firſt to dry the fruit in the ſun, then to take out the kernels and roaſt them at the fire in an iron pan pierced full of holes, and afterwards grind them on a marble ſtone, till they are brought to the conſiſtence of a paſte, mixing with them a quantity of ſugar, ſome long pepper, and Vanilla, or vanilloes, a little black ſeed, that gives the chocolate an agreeable flavour. Some add cinnamon, cloves, and aniſe, and even muſk and ambergriſe if they love perfumes.

What is made in Spain differs ſomething from that made in the Weſt Indies, two or three kinds of flowers being added, beſides hazlenuts and almonds; and they frequently work their paſte with orange-water, which they think gives it a greater firmneſs and conſiſtence. Sometimes the cakes are made up of the nut without any admixture, thoſe that uſe it being left to add what quantity they pleaſe, of ſugar, cinnamon, &c. And this plain method is uſually followed in England, except that ſometimes ſugar and ſometimes vanelloes are added, ſcarce any other ingredients being known amongſt us. It is ſaid that in New Spain there is ſuch a quantity of chocolate made as to uſe annually twelve millions of pounds of ſugar.

FOSSILS.

ALMOST every part of South America afford mines of gold and ſilver, but thoſe rich metals are moſt abundantly found in Chili and Peru, as well as large quantities of copper, tin, lead, and quickſilver. It is obſerved, that, of all the metals, gold is moſt frequently found native; being rarely met with in a ſtate of ore, and then intermixed with the ores of other metals. But though native gold be free from the penetrating ſulphurs which reduce other metals to ores, it is very ſeldom found pure, but has almoſt conſtantly a mixture of ſilver with it, and frequently of copper. If it have any conſiderable quantity of copper in it, it is eaſily diſcovered by its hardneſs, but the ſilver is not ſo readily detected. Sometimes the native gold is found in the mines in pure maſſes, ſo large as to weigh twelve, fourteen, or ſixteen ounces; but theſe are very rare. Its more common appearance, in its looſe ſtate, is in form of what is called gold-duſt, that is, ſmall particles mixed among the ſand of rivers, which is very frequent in Guinea, and many other parts of the world: but native gold is alſo found in a middle ſtate, as to ſize, between the two kinds juſt mentioned, in the clifts or perpendicular fiſſures of the ſolid ſtrata, in the mountains of Chili. Theſe fiſſures are uſually filled with a reddiſh earth, the native gold being either looſe amongſt it, or immerſed in a debaſed cryſtalline ſtone of a bluiſh hue, and generally in flattiſh pieces, from the ſize of a ſmall pea to that of a horſe-bean; but no great quantity has yet been diſcovered. When they have dug out this red marle, it is carried on mules to the Lavadero's, as they call them, a ſort of baſons of water *, where it undergoes ſeveral repeated lotions in different waters, till the earthy and impure parts are all ſeparated and carried away by the ſtream, and the gold left at the bottom.

In theſe forms gold frequently appears in thoſe parts of the world where it abounds, but ſtill the greateſt quantities of it are found bedded in maſſes of hard ſtone, which lie at vaſt depths, being often dug at a hundred and fifty fathoms. There is no peculiar ſtone in which it is immerſed, but it is met with indiſcriminately in ſeveral kinds, ſome ſofter, ſome harder, and even in earths. The richeſt maſſes are uſually a whitiſh but opake ſtone, which

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* Theſe lavatories or baſons, according to M. Frezier, are made ſomewhat in the manner of a ſmith's bellows, into which a little rivulet of water runs with a great deal of rapidity, diſſolving the parts of the earth, and carrying every thing away with it except the particles of gold, which by their weight precipitate to the bottom. Sometimes large pieces of gold are found in theſe lavatories, which uſually turn to very great profit when there is no want of water, the expences of getting gold this way being but trifling compared with thoſe accruing in the common method, by machines, fire, and quickſilver.

is a debaſed cryſtal, containing a great deal of white earth, often tinged likewiſe with black, and ſometimes with other colours. In this ſtone the gold lies in a great variety of figures, ſometimes like ſmall branches, at other times interwoven in narrower or broader veins, or in little flat ſpangles, intermixed with ſpecks of black. But, beſides this ſort, there are many coarſer ſtones in the mines of Peru, which contain conſiderable quantities of gold, viſible in large or ſmall ſpots; and theſe are of all colours, but generally white or reddiſh. In theſe ſtones the gold is commonly in ſmall ſpangles.

In order to ſeparate the gold when dug out of the mines, they firſt break the metalline ſtone or ore with iron mallets, and then carry it to the mills, where it is ground to a very fine powder, which is afterwards paſſed through ſeveral braſs-wire ſieves, as fine as any we have made of ſilk *. The powder thus prepared is laid in wooden troughs, with a proper quantity of mercury and water, where it is worked together, and there left to ſaturate in the ſun and air for eight and forty hours. During this time the mercury imbibes all the gold, without cohering with the coarſer earth or ſand, which, upon inclining the trough, is eaſily waſhed away with the water. The maſs

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* The uſual method of ſeparating gold from the ore in Hungary, See in Vol. VII. p. 106.

which remains now concreted at the bottom is nothing but gold, mercury, and ſome fine earth, which laſt they diſengage from the maſs by repeated affuſions of hot water, and the mercury they ſeparate by diſtillation in large alembicks. The gold in this ſtate, though not yet perfectly pure, is called Virgin Gold, as well as that found in the ſand of rivers, or that in grains in the mines, in regard none of them have paſſed the fire. After this they uſually fuſe it in crucibles, and caſt it into plates or ingots.

The next metal to gold in value is ſilver, and of this the mines of Peru and ſome other parts of America afford the greateſt quantities of any in the world. This metal, as well as gold, is found native more frequently than in a ſtate of ore; what are commonly called ſilver-ores, ſays Dr. Hill, being no other than ſtones of various kinds, in which are bedded large quantities of native ſilver. Sometimes it is alſo contained in the ſofter foſſils, as earths; and ſometimes it is found looſe among ſtrata of ſand. That which is lodged in ſtone is uſually diſpoſed in flat maſſes variouſly ſtreaked, ridged, and often reſembling ſilver-lace; that in earths is frequently branched, and that among ſand in ſmall roundiſh or oblong granules. However, though ſilver is often found thus native and pure, it is likewiſe frequently met with in a ſtate of ore, and ſometimes embodied in the ores of other metals. The proper and peculiar ores of ſilver are alſo very various in their appearance, but its moſt uſual ore is a ſingular and remarkable body, being naturally malleable. The colour of this is a blackiſh blue, and it ſo nearly reſembles lead that many have miſtaken it for that metal in its native ſtate. It is found in large irregular maſſes, ſometimes of a laminated ſtructure, extremely heavy, and very rich in metal, containing often three fourths of pure ſilver; but among theſe are uſually found ſome of a more debaſed nature, containing much leſs ſilver, and diſtinguiſhed from the reſt by their not being malleable, and of a paler colour.

Another appearance of ſilver in the ſtate of ore is in browniſh maſſes, obſcurely tranſparent, not a little reſembling the coarſer ſorts of amber. Theſe are uſually of an irregular ſhape, often in the form of our common pebbles, but ſometimes flatted and with rugged edges. This ſort of ore breaks with a ſlight blow, and is alſo very rich in ſilver, uſually containing near two thirds of its weight in metal. But there is yet another appearance of ſilver-ore, ſuperior to all other ores in beauty, being a compact ſubſtance, of a regular texture, of a very bright red, a ſmooth even ſurface, and conſiderably pellucid. This very much reſembles the native Sandarach *, and is ſometimes exactly of the

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* This is a preparation of orpiment, and is the ſame with what is otherwiſe called red Arſenic; but there is alſo a white gum named Sandarach, obtained from the trunk and thick branches of the great juniper-tree, by inciſions made in the heats of ſummer.

fine florid red of that body, and now and then approaching to a crimſon.

Theſe are the more uſual appearances of ſilver in a ſtate of ore, but it is found with numberleſs accidental variations; and there are ſtones of all colours and conſiſtences wrought in different places for the ſilver they contain. In the mines of Peru, ſome of the ores, as they are called, are grey ſpotted with blue and red; others have various ſhades of red, with admixtures of yellow or brown; and others are black, green, or yellow. Some of theſe are of the nature of one or other of the ores above deſcribed, only debaſed by adventitious mixtures; the others are ſtones wherein native ſilver is lodged, which are commonly confounded with the reſt under the name of ſilver-ores. The black ores are the richeſt and moſt eaſily wrought, and the ſilver they yield is of the beſt ſort. The veins of ſilver, of what quality ſoever, are uſually richer in the middle than towards the extremities; but the richeſt places are thoſe where the veins interſect.

The moſt celebrated mines of Peru are thoſe of Potoſi, which have now been opened above two hundred years, and yet continue to be wrought with equal advantage as when firſt diſcovered; only with this difference, that the veins, which were then almoſt on the ſurface of the mountain, are now ſunk to prodigious depths, ſome of the pits or wells being two hundred fathoms deep, and yet, which is very re-

remarkable, not incommoded with water. What renders the working of the mines exceeding dangerous, are the exhalations ariſing from them, which are even felt on the outſide, and affect animals that graze in the neighbourhood; but within they ſtupify the miners, none of whom can bear ſo poiſonous an air above a day together. Sometimes it is ſo fatal as to kill on the ſpot, and oblige them to ſtop up the veins from whence it exhales. The mines of Potoſi are much the leaſt ſubject to theſe vapours, and yet without the herb Paraguay, the infuſion whereof is drank by the miners as we do tea, theſe mines muſt ſoon be abandoned. Some millions of Indians have periſhed in them, and prodigious numbers continue to be deſtroyed yearly.

It is ſaid that the mines of Potoſi were accidentally diſcovered by a native, who purſuing his game up the mountain, and being like to fall, laid hold of a ſhrub that grew upon a vein of ſilver to ſave himſelf, and happening to pull it up by the roots, he ſpied the precious metal underneath. He kept this thing ſecret till he had got ſilver enough to enrich himſelf and his family, and then made it known to the Spaniards.

This famous mountain, whoſe treaſure ſeems inexhauſtible, riſes in the form of a ſugar-loaf, is near a mile high, and about three miles in circumference at the bottom. But though the mines of Potoſi ſtill keep up their reputation, there are ſeveral more lately diſcovered, that are ſaid to exceed them in richneſs. Such are thoſe of Oruro, eight leagues from Arica, and thoſe of Ollachea near Cuſco, opened in 1712. It is remarkable, that moſt of the mines of America are found in cold and barren places.

The manner of ſeparating ſilver from its marcaſite or ore is nearly the ſame as in gold *. They break the ore in the ſtamping-mill till it is reduced to powder, and then mix it up with mercury into a ſort of paſte, which they knead in the troughs till the water has by degrees waſhed away all the earthy particles. After this they ſtrain off part of the mercury from it through a woollen bag to ſerve again, and the reſt is made to evaporate by fire. The ſilver that remains behind is, laſt of all, perfectly refined from all heterogeneous matter by a ſolution of lead, which, exhaling from it, carries off in fumes the copper or other allay.

Another part of the riches of Peru are its mines of quickſilver, which afford ſurpriſing quantities of that uſeful mineral. Thoſe of Guancavelica or Oropeſa are the moſt famous, and are more conſiderable than the rich mines of Friuli in Europe, of which we have heretofore given an account. Frezier tells us, that the mines of Guancavelica ſupply all the gold and ſilver mills in that kingdom; but this

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* How ſilver is ſeparated from the ore in Hungary, See in Vol. VII. p. 107.

ſeems to be a miſtake, ſince other mines are wrought which produce plenty of quickſilver. The earth containing the quickſilver is of a whitiſh red, like bricks half burnt, which being pounded, is put into an earthen furnace, whoſe top is vaulted like an oven. They ſpread it on a layer of common earth, wherewith the grate of the furnace is covered, under which they keep a ſmall fire made of a ſhrub they call Icho, which is of ſuch neceſſity in theſe works, that the cutting it for any other uſe is prohibited for the ſpace of twenty leagues round. In proportion as the pounded mineral heats, the mercury riſes volatilized into ſmoke, which finding no vent through the capital of the furnace, which is exactly luted, eſcapes through a hole made for that purpoſe, communicating with ſeveral earthen cucurbits, each having a little water at the bottom. By means of this water the ſmoke is condenſed, and the quickſilver precipitates, and is taken out when the operation is over.

It is remarkable in this proceſs, that the farther the cucurbits are from the furnace, the more they are filled with quickſilver; and they all grow ſo hot that they would break, if they were not ſprinkled from time to time with water.

The workmen employed in this buſineſs never hold it long, but become paralytic, and die miſerably. A precaution they uſe is to hold a piece of gold in their mouth, to imbibe the pernicious effluvia, and prevent their paſſage into the body.

Having been ſo particular in our account of the gold and ſilver of the ſouth part of America, it will not be expected we ſhould ſay much concerning the baſer metals, eſpecially as we have ſpoken of them ſufficiently in Europe. We may juſtly obſerve however, that Chili abounds with copper, of which the Spaniards make their great guns for thoſe parts of their dominions, the bells of their churches, and family utenſils; ſo that ſince the working of the mines of Chili, no copper has been ſent from Spain, as they afford the Indies a ſufficient ſupply of that metal.

As to precious ſtones, though we have deſcribed moſt of them in our ſurvey of the Eaſt Indies, it is proper to obſerve, that rich mines of diamonds have lately been diſcovered in Braſil, and Peru is noted for its emeralds. The antients indeed, and Pliny in particular, miſtakenly reckoned up various kinds of emeralds, but the modern naturaliſts and jewellers only know of two, the Oriental and the Peruvian. Nay, according to Tavernier, theſe two ſhould be reduced to one, namely, the Peruvian; for he maintains, that there is not, nor ever was, any mine of emeralds in the Eaſt Indies, but that all that are there found were brought from Peru by way of the South Sea, a commerce having been carried on thither by the Peruvians before the diſcovery of America by the Spaniards. However, ſuch commerce not being ſufficiently proved, we may keep to the diſtinction of Oriental and Peruvian emeralds, of which the former are harder, more brilliant and tranſparent than the latter. and beſides, there are ſuch quantities brought from Peru by the way of Carthagena, that they are much ſunk in value and reputation.

MOUNTAINS, SPRINGS, RIVERS, &c.

IT is generally allowed, that the mountains of South America are not to be paralled in any other part of the world, for their ſurpriſing height and extent; witneſs that prodigious chain of them called the Andes, which begins in the moſt northern part of Peru, and extends itſelf quite to the Streights of Magellan, a length of between three and four thouſand miles. Acoſta relates, that he once aſcended one of the higheſt of theſe mountains in Peru, called Pariacaca; and that he went prepared according to the beſt inſtructions he could get, with ſeveral more who had the like curioſity; but notwithſtanding all his precaution, when he came near the top he was ſeized with ſuch pains that he thought he ſhould have fallen to the ground; and the reſt of the company being under the like diſorder, they all made haſte down as faſt as they could, without waiting for one another. They were all taken with violent reachings to vomit, and not only brought up green phlegm and choler, but a great deal of blood. This laſted for three or four hours, till they had deſcended to the lower part of the mountain; and ſome of them purged violently; but generally the ſickneſs goes off before they get to the bottom, and is attended with no ill conſequences.

People who paſs this ridge of mountains in any part of them, for upwards of five hundred leagues, are affected in the like manner, but more in ſome places than in others. Acoſta had paſſed the Andes at four other different places, and always felt the like diſorder, but not ſo much as at Pariacaca; and the beſt remedy they found againſt it was to ſtop their mouths, noſes, and ears, as much as poſſible; the air being ſo ſubtle and piercing, that it affects the entrails both of men and beaſts. This indeed is no wonder, ſince the height of the Andes, according to Acoſta, is ſuch, that the Alps, in compariſon to them, ſeem but as ordinary houſes in regard to lofty towers. Hence our author concluded, that the air on the top of theſe mountains was too pure and ſubtil for animals to breathe in, they requiring a groſſer medium*; and this, he ſuppoſed, occaſioned that diſorder in the ſtomach.

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[*] As too groſs, ſo too rare an air is unfit for reſpiration, as appears not only from experiments made by the air-pump, but from the accounts of thoſe who have been on the tops of very lofty mountains, where the air is conſiderably rarefied. An eccleſiaſtical perſon, who had viſited the high mountains of Armenia, told Mr. Boyle, that whilſt he was on the upper part of them, he was forced to fetch his breath oftener than uſual; and taking notice of it when he came down, the people told him it was what they themſelves had frequently experienced. The ſame eccleſiaſtic made the like obſervation on the top of a mountain in the Cevennes; and a curious traveller, on one of the higheſt ridges of the Pyrenees, called Pic de Midi,

As to the reachings and vomitings complained of by thoſe who paſs the Andes in Peru, it is remarkable that thoſe who travel over that high chain of them in Chili, called the Cordillera, are not affected with ſuch diſorders, but only with a difficulty of breathing, which is perceived more or leſs on the tops of all high mountains: ſo that in Peru there may poſſibly be a concurrence of ſome other cauſes beſides the thinneſs of the air, to produce the above effects, ſince the mountains of Chili are conſiderably higher, and conſequently the air at top of them more rarefied. When travellers aſcend the higheſt parts of theſe mountains, they cannot ſee the country below for clouds, whilſt the ſky is clear over their heads, and the ſun ſhines out in its full luſtre. They ſometimes obſerve the rainbow far beneath them, and ſee ſtorms and tempeſts at a diſtance falling into the valleys, whilſt all is bright and ſerene above. We are told that there are fiery meteors about theſe mountains, ſometimes ſo high in the air as to reſemble ſtars, and ſometimes ſo low that they frighten the mules, by buzzing about their ears and feet; and it is no uncommon thing to have ſnow and thunder at the ſame time. There are alſo ſeveral volcano's in this chain of mountains, which ſometimes break out with dreadful violence, rending

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Midi, found the ſame inconvenience, he and his company being obliged to breathe ſhorter and oftener than in the lower air. See Derham's Phyſico-Theology, p. 6. and Phil. Tranſ, N°. 63.

the rocks, throwing up great quantities of fire, and roaring ſo as to be heard at a vaſt diſtance.

The difference that travellers obſerve between the eaſt and weſt ſide of the Andes is ſo great, that they ſeem two different worlds. If from the top of them we look towards the eaſt, all is covered with thick vapours, which intercept the light of the ſun, and over-ſhadow all the country, engendering likewiſe frequent ſtorms of hail, with terrible thunder and lightning; but on the weſt there is not a cloud to be ſeen, the heavens being conſtantly ſerene and clear. Some who have paſſed the higheſt parts of the Cordillera relate, that they found no ſnow on the top, though in the beginning of winter; whereas in the lower parts the ſnow was ſo deep that the mules could ſcarce travel. Theſe mountains indeed are only paſſable in ſummer, or before the winter is much advanced, on account of the ſnows and exceſſive cold: and even in the moſt beautiful ſeaſon, there are ſuch frightful precipices, with deep rivers at the bottom, as frequently occaſion the loſs of mules and travellers. The ſteepneſs of aſcent and deſcent makes the paſſage difficult; but the tediouſneſs of the way is in ſome meaſure alleviated by the agreeable caſcades, which are naturally formed amongſt the rocks and mountains. In ſome parts of the valleys the water ſprings up to a great height, like artificial fountains, amongſt odoriferous plants and flowers, which yield a delightful proſpect. Moſt of theſe ſtreams and ſprings are ſo exceeding cold, that a man can ſcarce drink them, nor hold his hand in them above a minute; but in ſome places there are hot ſprings, which leave a green tincture in the channel through which they paſs, and are reckoned good againſt many diſtempers. We read of a natural bridge of rocks over one of theſe rivers, from the vault whereof hang ſeveral pieces of ſtone reſembling icicles, formed, as the water drops from the rock, into various ſhapes, and of different colours. This bridge is broad enough for three or four carts to paſs a-breaſt; and there is another bridge near it, laid over by art, as ſome ſay, between two rocks, but an author, who ſaw it, thinks it is rather the work of nature. It is ſo far above the river, that he could not hear the ſtream, though it runs with great rapidity; and though the river be of a conſiderable breadth, it appeared like a brook when he looked down from the bridge, which he could not do without horror.

But, if we may believe Acoſta, there is ſtill a greater danger in travelling over ſome of the mountains of Peru, than any we have yet mentioned. He tells us, that there are mountainous uninhabited deſarts, where a ſudden blaſt of air ſometimes ſtrikes a traveller dead in an inſtant; and that the Spaniards formerly paſſed theſe mountains in their way to Chili, but now either go by ſea, or take another road by land, to avoid the danger of croſſing them, in which journey many have periſhed, and others have loſt their fingers and toes, and have been rendered cripples. The ſame author relates, that General Coſtilla marching over them with his army, great part of his men ſuddenly fell down dead, and their bodies remained there without ſtench or corruption. As incredible as this appears, it ſeems to be confirmed by the reports of our ſeamen, who aſſure us, that they have ſeen great numbers of bodies of men, women, and children, lying dead upon the ſands in Peru, and looking as freſh as if they had not lain there a week; but when they were handled, they proved as dry and light as a ſpunge or a piece of cork. Whatever was the cauſe of the death of theſe people, it is agreed on all hands, that the dryneſs of the Peruvian air, and the heat of the ſands, preſerved their bodies from putrefaction.

The rivers of South America, eſpecially thoſe which take their riſe to the eaſtward of the mountains we have been ſpeaking of, deſerve our notice, ſome of them being the largeſt in the world, both with regard to their depth and breadth, and the length of their courſe; but moſt of thoſe that riſe on the weſt ſide of the Andes are rather torrents than rivers, made by the annual rains that fall on the mountains.

The Rio Grande, or Magdalena, which has its ſource in the province of Quito in Peru, near the Equator, runs directly northward above a thoua thouſand miles, and falls into the ſea between Carthagena and St. Martha.

The celebrated river Oronoque, or Oronoko, which has its ſource not far from that of Magdalena, after a winding courſe of fifteen hundred miles or upwards, falls into the North Sea near the Iſle of Trinidad, forming a large gulf, in which there are many ſmall iſlands.

But the moſt amazing river, and generally ſuppoſed the largeſt in the world, is that of the Amazons *, which riſes about ten leagues from

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* It may not be amiſs to acquaint the reader with the origin of the name of this river, and of the country through which it flows. The Amazons then, according to the antient hiſtorians, were a nation of warlike women, who founded an empire in Aſia Minor, along the coaſts of the Black Sea, out of which men were excluded. What commerce they had with that ſex was only with ſtrangers at ſome appointed times, and all their male children they killed, and cut off the right breaſt of the females, that their arm might be the ſtronger and more at liberty in battle. It is a point controverted indeed, even amongſt antient writers, whether ſuch a nation of Amazons ever exiſted, but the greateſt part of them are on the affirmative ſide of the queſtion. M. Petit, a French phyſician, publiſhed a Latin diſſertation in 1685, to prove that there really was ſuch a race of female warriors, wherein he has made curious enquiries relating to their habit, their arms, the cities they built, &c. Be this as it will, the Spaniards, who firſt

from Quito in Peru, and after many windings and turnings keeps its courſe to the eaſt till it falls into the Atlantic Ocean between the coaſts of Guiana and Brazil. Its channel, about ſixty leagues from its head, is three miles broad; and as it receives many large rivers in its courſe, it grows wider and wider as it advances towards the ocean, where its mouth is fifty or ſixty leagues in breadth. Even before it leaves Peru, its depth is ten or twelve fathoms, from whence it increaſes to twenty, thirty, fifty, and ſometimes much more, before it reaches the ocean. From its ſource to its mouth it is eight or nine hundred leagues in a direct line; but the windings make it about twelve hundred, or eighteen according to ſome computations. In the year 1639, Texeira, a Portugueſe, employed himſelf ten months in making a ſurvey of this great river.

There is another river of South America little inferior to the former in breadth and depth, though it does not come up to it in length of courſe, viz. that called Rio de la Plata, which, reckoning only from the con-

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firſt diſcovered and ſailed up the American river we are ſpeaking of, were told of ſuch a barbarous nation of women by ſome of the natives, on purpoſe to frighten them; and they actually found the women, in ſeveral places bordering on the river, as fierce and warlike as the men, it being their cuſtom to accompany their huſbands to battle, and to ſhare their fate: and hence proceeded the name of the country and river of the Amazons.

fluence of the two rivers that form it, runs above two hundred leagues, and is all the way navigable for the largeſt veſſels, and full of delightful iſlands. In its courſe it receives ſeveral conſiderable rivers, and ſometimes ſwells to ſuch a height as to overflow a great deal of land on each ſide, during which time the natives betake themſelves to their canoes, and when the inundation abates, return to their old habitations. It falls into the ocean by a mouth thirty leagues broad, running with ſuch ſtrength and rapidity, that it takes off the ſaltneſs of the ſea to the diſtance of ſeveral miles. A certain author tells us, that the water of this river is very clear, ſweet, and excellent for the lungs, ſo that the people who drink it have melodious voices, and are generally inclined to muſic; but ſuch an account is too whimſical to be regarded. He adds, that it petrifies the branches of trees that fall into it, and that veſſels of various figures are naturally formed of its ſand, which keep water cool, and look as if they had received an artificial poliſh.

We ſhall only mention one more river, or at leaſt a conſiderable ſtream of water, remarkable for its ſubterraneous paſſage. This is in the weſtern parts of Tucuman, a province of Paraguay, where it ſeems there is a very large and lofty mountain, which, from its glittering when the ſun ſhines upon it, is called the Cryſtal Mountain. Under this is extended a frightful cavern, through which runs a river, with ſo many windings and turnings, that the water is four and twenty or thirty hours in its paſſage from one ſide of the mountain to the other, according to the computation of ſome Portugueſe, who were raſh enough, as Purchas relates, to make the experiment, by hazarding their perſons on a rafter made of canes.

As to the qualities of the waters in the ſouth part of America, it is obſerved that ſome lakes in the valleys are extremely hot, particularly one near Potoſi in Peru, which perfectly boils up in the middle, where the ſpring riſes; but the heat is ſo moderate near the ſhore, that the inhabitants bathe in it frequently. In the ſandy plains near the coaſt of Peru there are very few ſprings, but a great variety in that part which is remote from the ſea; amongſt which there is one near Oropeſa, whoſe water is very hot, and after running a little way it petrifies and forms a rock. It is ſaid the natives uſe the ſtone in building their houſes, it being ſoft, light, eaſily wrought, and yet very durable. Travellers alſo tell us of ſprings of liquid matter much reſembling tar, and put to the ſame uſes by ſeafaring people.

At the baths of the Ynca's, as they are called, an appellation given to the antient kings of Peru, there is a ſpring of water that iſſues out hot and boiling, and another near it as cold as ice, which uſed to be tempered and mingled together for thoſe princes to bathe in.

Near Cuſco there is ſaid to be a fountain, whoſe waters, after a ſhort courſe, turn into ſalt.

From the top of the mountain Balconotta, by ſome reckoned the higheſt in Peru, there riſe two ſprings, which run different ways, and ſoon form two conſiderable ſtreams. Their waters, when they firſt iſſue from the rocks, are of an aſh-colour, hot and ſmoaking, and ſmell like burning coals; which ſmell they retain a great way from their ſource, till they mingle with other ſtreams, and become cool.

To theſe we may add another fountain in Peru, which ſends forth a ſtream almoſt as red as blood, from whence it has obtained the name of the Red River.

SECT. III.

Particular Deſcriptions of the moſt remarkable public Buildings, and other ſingular Productions of Art in South-America.

NOthing very extraordinary can be expected in the account of the buildings of this part of the world, where the inhabitants, till lately, have been in a ſtate of barbarity, and total ignorance of the manual, as well as the polite arts. But, as the Inca's, Inga's, or Kings of Peru, are famous in hiſtory, it may not be improper to give ſome account of the moſt remarkable ſtructures which the Spaniards found when they firſt invaded that country. At that time, Cuſco was the capital of that kingdom, and there was a caſtle, built in ſuch a ſurpriſing manner, that many perſons, who ſaw it, imagined it could not have been raiſed without the aſſiſtance of enchantment. This caſtle was a fortreſs, which ſtood on the top of a hill; and on the edge of a precipice, which, towards the town, was perfectly perpendicular. Towards the country, it was defended by triple ſemicircular walls, of ſuch a height and thickneſs, that they were proof againſt all the force that could be brought againſt them: ſome of the ſtones were of ſuch a prodigious ſize, that it was inconceivable how they were hewn out of the quarry, or brought to the place; the natives having no iron tools, no beaſts to draw them, nor engines to raiſe them to ſuch a height. They were dragged, however, by the ſtrength of men, ten, twelve, or fifteen leagues, over hills and vallies, and along the moſt difficult roads: and there is a ſtone in particular, to which the Indians gave the name of *Syacuſa*, which ſignifies the *weary*, becauſe it never arrived at the place for which it was deſigned. This rock was drawn fifteen leagues by twenty thouſand Indians, over very rugged and uneven ways; but notwithſtanding all their care and ſtrength, it got the better of them, and tumbling down a ſteep hill, killed ſeveral hundred men, who were endeavouring to poiſe the weight. They raiſed it, however, once again, and with incredible pains, dragged it to the plain, in the neighbourhood of Cuſco, where they were obliged to leave it, never being able to get it up the hill, on which the caſtle was ſituated.

Between each wall of the caſtle, there was a ſpace of twenty-five, or thirty feet, which was filled up with earth, and every wall had a breaſt-work on the top of it. Beyond theſe walls, were three large towers, ſtanding in a triangle, anſwerable to the bending of the walls. The principal of theſe towers had a fountain of excellent water, brought to it by a ſubterraneous aqueduct, the ſource whereof was known only to the Inca and his council, leſt an enemy ſhould diſcover the ſtream, and cut it off, in caſe of a ſiege. This tower was round, and in it the Inca had an apartment, nobly furniſhed, like the reſt of his palaces. The other two were ſquare, and contained rooms for the garriſon, who were all of the royal blood. Underneath theſe towers, were apartments as large as thoſe above; and they had a communication with each other by a ſubterraneous labyrinth, through which it was difficult for a ſtranger to find his way without a guide. It is ſaid, that great part of the new city of Cuſco, was built with the ſtones found in the ruins of this fortreſs.

The palaces of the Inca's, in Cuſco, beſides the caſtle juſt mentioned, were very ſpacious and magnificent, ſome of the halls being two hundred paces in length, and fifty or ſixty in breadth; inſomuch that the Spaniards converted one of them into a cathedral church. The ſtones of theſe buildings were ſo well joined together, that they needed no cement; but ſometimes, for the ſake of ornament, they cloſed up the ſeams of their ſtructures with melted gold and ſilver, which occaſioned the total deſtruction of moſt of them, the Spaniards ſubverting the very foundations in hopes of finding treaſure. The furniture and decorations of theſe palaces, were the figures of men, beaſts, birds, and other animals, caſt in gold; and on the walls, inſtead of tapeſtry, were plants, and flowers of the ſame metal, intermixed with ſerpents, butterflies, and other reptiles and inſects. It is ſaid they had no chairs in their palaces, but the Inca himſelf ſat on a ſtool made of gold, without arms, or back, having a pedeſtal of the ſame metal: they had alſo ciſterns of gold in their bagnios, and the utenſils of their kitchens, and in the meaneſt offices, were likewiſe of gold; but they neither purchaſed houſes nor lands with this metal, as we do, but uſed it as an ornament when living, and buried it with them when they died. The royal gardens were not only planted with great variety of trees, flowers, &c. but the figures of thoſe and all ſorts of animals were made of gold, and placed in the walks to adorn them.

However, notwithſtanding the magnificence of the palaces in Cuſco, nothing was comparable to the temple of the ſun, which was enriched with the greateſt treaſures that ever the world beheld. It was built of free-ſtone, and lined with gold, the cieling being alſo of the ſame metal, though the roof itſelf was no better than common thatch. It was divided into ſeveral chapels, cloyſters, or apartments; in the principal whereof, towards the eaſt, was placed the image of the ſun, conſiſting of one gold plate, that covered the whole breadth of the chapel, and twice as thick as the plates that covered the other walls. This image was of a round form, repreſenting the ſun with his rays darting from him, much in the ſame manner as he is drawn by European Painters; and on each ſide of it were placed the bodies of the deceaſed Inca's, ſo embalmed that they ſeem to be alive. Theſe were placed on thrones of gold, but on the arrival of the Spaniards they were concealed by the Indians, with moſt of the treaſures of the temple.

This temple had ſeveral gates covered with gold; and round the top of it, on the outſide, was a cornice a yard deep, conſiſting of gold-plate. Beſides the chapel of the ſun, there were five others of a pyramidical form, the firſt of which was dedicated to the moon, deemed the ſiſter and wife of the ſun; and the doors and walls of this ſtructure were covered with ſilver. Here was the image of the moon, of a round form, with a woman's face in the middle of it; and on each ſide of the image were placed the bodies of the deceaſed empreſſes ranged in order. Next to this chapel was that of Venus, by the Peruvians called Chaſea, who was much eſteemed as an attendant on the ſun, as the reſt of the ſtars were deemed maids of honour to the moon; and this chapel was likewiſe plated with ſilver. The third chapel was dedicated to thunder and lightning, which they looked upon as ſervants of the ſun; and this was cieled and wainſcotted with plates of gold. The fourth was dedicated to the rainbow, as owing its original to the ſun; and this was alſo covered with gold, and had on one ſide of it a repreſentation of the rainbow. The fifth chapel was an apartment for the uſe of the high-prieſt, and others who officiated in the temple, who were all of the royal blood; and this, like the chapel of the ſun, was adorned with gold.

There was no other image worſhipped in the temple but that of the ſun, but they had the figures of men, women, and children, and of various birds, beaſts, and other animals, of wrought gold, placed in it for ornament; and all the veſſels and utenſils were of the ſame precious metal. Mention is alſo made of a ſort of nunnery, in which were kept a thouſand or fifteen hundred virgins, all of the blood royal, who were intended only for the ſervice of the temple. Nor was it only in the city of Cuſco alone that ſuch a temple was erected, but almoſt every large town in the country had one, adorned in the like ſumptuous manner.

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CHAP.

CHAP. II.

Of NORTH AMERICA.

SECT. I.

A general Account of North America.

UNDER this diviſion of the American continent are comprehended New Spain, New Mexico, Canada, or New France, Florida, and the Engliſh Empire. But there is no part of it more celebrated in hiſtory than New Spain, or Old Mexico, which was a great and flouriſhing monarchy for ſeveral ages, governed by its own kings, choſen out of their chief captains, without regard to hereditary ſucceſſion, till 1521, when it was entirely conquered by the Spaniards, under Ferdinando Cortez; ſince which it has remained ſubject to the crown of Spain, and is governed by a viceroy, whoſe ſtated reſidence is at the city of Mexico.

As to New Mexico, it is ſo called becauſe diſcovered ſince the Old, and is ſometimes ſtiled by the Spaniards a kingdom, and ſometimes a province. The greateſt part, however, of this vaſt country is ſtill in the hands of the natives, who are a peaceable and generous people, but yet were not only more numerous, but better provided for their defence than any other Americans the Spaniards had to deal with; who, at their firſt arrival in that country, which was about the year 1539, found them well cloathed, their lands cultivated, and large ſtocks of cattle, tolerable huts in their villages, and good ſtone-houſes in their towns. They were governed by petty princes or Caciques, whom they choſe for their wiſdom and valour; and though they worſhipped the ſun and moon, they ſeemed more willing to embrace the Chriſtian religion than any other of the American nations; but they did not ſeem at all willing to part with their liberty, which, in a great meaſure, they ſtill preſerve. Of the various nations in this country, mentioned by the Spaniards, the principal are the Apaches; who thinking themſelves oppreſſed by the Spaniſh government, made an inſurrection towards the cloſe of the laſt century, and did a great deal of miſchief, but were at length ſuppreſſed, and have ſince been kept in awe by ſtronger garriſons. In the late reign of Philip the Fifth, the Spaniards likewiſe took care to people theſe northern provinces, by tranſmitting orders to the viceroy of Mexico, to ſend a number of poor families thither; a precaution in which they are certainly right, if it be only to guard againſt foreigners, it being very poſſible, according to

Dampier, to make a deſcent oppoſite to the iſle of California, and penetrate to their richeſt mines. But if annual draughts of people were ſent from Europe into New Mexico, and there ſettled in convenient farms, it is likely they would ſoon grow populous, eſpecially as mankind increaſes more in cold than in hot climates.

The Sanſons mention a province in this country called Quivira, which they place on the frontiers of Florida, and ſay it has but few inhabitants, and thoſe very barbarous. The men are clad in the ſkins of cows, the women go naked, have very long hair, and eat raw fleſh; and they change their abodes as they are invited by the ſeaſons and paſtures. Their houſes are likewiſe covered with the ſkins of their black cattle, they make bow-ſtrings with their hair, awls and trumpets with their bones, cups with their horns, and fire with their dung, there being but little wood in the country.

Gemelli, the Popiſh miſſionary, tells us, that in 1698, when he was at Old Mexico, he diſcourſed with the governor of New Mexico, who told him, that though great part of this country had been lately conquered, there remained ſtill much more unſubdued; that the natives paint their bodies; that they are ſuch dextrous archers, that they can hit a piece of money thrown up into the air; that they are great lovers of the fleſh of mules, which they often take from travellers, without robbing them of the goods they carry; that the King of Spain maintains ſix hundred horſe, beſides foot, in ſeveral garriſons, to keep them in awe, but being at a vaſt diſtance from Old Mexico, the natives often revolt, becauſe they know the Spaniards cannot be ſpeedily reinforced. Gemelli adds, that the ſoldiers are armed with muſkets, bucklers, and half-pikes, and hunt the natives like wild beaſts, being ordered by the government not to kill, but to take them, in order to inſtruct and civilize them. The country, he obſerves, is plain and paſſable for carriages ſome months in the year; but they have ſuch wide deſarts to paſs, that the ſoldiers and travellers, who ſometimes do not ſee a cottage for ſeveral days, encamp every night, and are forced to keep guard for fear of being attacked by the ſavages. Travellers carry along with them matraſſes and pillions, or rather bladders of leather, which at night they blow full of wind to lay their heads on, and let it out in the morning, when they pack them up to proceed on their journey.

California is a country the moſt northern of any diſcovered and poſſeſſed by the Spaniards; the more ſouthern part of it was known to that nation ſoon after the diſcovery of Mexico, but it is only of late that they have penetrated into it, contenting themſelves before with the pearl-fiſhery on its coaſts. It was matter of doubt for a long time whether it was an iſland or joined to the continent; but in the lateſt maps it is laid down as a peninſula, which it really is, though it was not known to be ſuch till it was diſcovered by Father Caino, or Kino, a German Jeſuit, who landed in California from the iſland of Sumatra, and paſſed into New Mexico, without paſſing any other water than Rio Azul, or the Blue River, in about thirty-five degrees north latitude. On the north it is bounded by a continent unknown, on the eaſt by the province of New Mexico and the Gulf of California, which ſome call the Purple, others the Vermilian Sea, and by the South Sea on the ſouth and weſt.

Father Caino informs us, that the natives are tolerably well ſhaped, and very ingenious, that they live without houſes, or any ſhelter but trees in the ſummer, and caves in the winter. They were obſerved to kneel and pray on the firſt appearance of the new moon, but this Father and other miſſionaries ſoon inclined many of them to embrace Chriſtianity. They know no government but the abſolute ſtate of nature, every man being a ſovereign in his own family; ſo that there are continual feuds amongſt them, which ſometimes break out into broils and bloodſhed. The men go for the moſt part naked, except a fillet of fine cloth about their temples, and ſome beautiful bracelets of pearl. The women, beſides their head-dreſs, generally wear a mantle of ſkins over their ſhoulders, a piece of cloth girt round their bodies, and chains of pearl about their necks and arms. Thoſe who live on the eaſt ſide of California are enemies to the Spaniards, but in other parts of the peninſula they ſeem hoſpitable to all ſtrangers.

Captain Rogers, who lay a conſiderable time at Cape St. Lucar, ſays, that that part was mountainous, barren, and ſandy, and had nothing but a few ſhrubs and buſhes, bearing ſeveral ſorts of berries. Here the natives had large limbs, were ſtrait, tall, and of a blacker complexion than any he had ſeen in the South Seas. The women look very coarſe and wrinkled. Their chief food was fiſh, which they ſtruck very dexterouſly with wooden inſtruments; and they were excellent divers. Their bread was made of a black ſeed ground, which taſted like coffee. They did not value glaſs beads, and ſuch-like toys, as the Indians uſually do; but they were very deſirous of knives and other ſharp weapons, all their cutting inſtruments being made of the teeth of ſharks and other fiſhes. They had long bows, with ſtrings made of a ſort of graſs, arrows of cane four feet and a half long, pointed with fiſh-bones; and they ſhot birds flying. The Spaniards have lately made a ſettlement near the Cape abovementioned, which is only a village, and called California.

The Spaniards pretend to have been the firſt diſcoverers of that large part of North America called Canada or New France; but this is denied by the French, who were till the late general peace poſſeſſed of the greateſt part of it,

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when Canada and Florida was ceded to the Engliſh. John Verrazzano, a Florentine, put on ſhore there for proviſions, and gave it the name of New France, in compliment to King Francis, who had ſent him to diſcover a northern paſſage into the South Sea. This Florentine Captain, however, having been butchered by the wild natives, the French ſent thither James Cartier, from St. Malo's, who ſailed up as far as Quebec, but brought home a diſmal account of the country, ſeeing nothing but high craggy mountains covered with ſnow, and a few barren plains, inhabited by naked ſavages. Notwithſtanding this, it was not long before ſome other ſhips were ſent thither again, who ſailed up higher, and made better diſcoveries of the great river of Canada, or St. Laurence, as the French call it; and towards the beginning of the laſt century, a new colony was ſent thither from Rouen, who ſettled there, though not without ſome difficulty and danger; but having fortified themſelves on each ſide the river, and received freſh colonies from France, they gradually enlarged their territories.

The natives of Canada, at the firſt arrival of the French in that country, were rude, ignorant, and barbarous, and the greateſt part of them ſtill continue ſo, there being few of them that ſhew any inclination for a life more polite and civilized. Their government, laws, and cuſtoms, are of the ſame nature, they being all divided into ſmall tribes under their ſeveral heads, ſome living in villages and poor wooden huts, and others leading a rambling life; but there is a difference in their diſpoſitions, ſome being more affable and humane, others quite cruel and brutiſh, and extremely tenacious of their barbarous cuſtoms. One of theſe cuſtoms, according to Father Charlevoix, is, that as ſoon as their females have attained to the age of fourteen or fifteen years, they are allowed to proſtitute themſelves to whoever they pleaſe for the ſpace of three or four years; after which they begin to think of fixing their affections on a huſband, to whom, when married, they prove extremely conſtant and loving, and, if he dies, mourn for him all the reſt of their lives, without ever marrying another. This, ſays our author, joined to their licentiouſneſs before marriage, and their ſuckling their children ſo long as two, three, or even ſix or ſeven years, are the main cauſes of their infecundity; for in other reſpects both men and women are robuſt and ſtrong, and inured to the hardeſt toils and fatigues. Their eyes, he adds, are ſo ſtrong, that though they are continually dazzled with their ſnows, or darkened with the naſty ſmoke of their huts at leaſt ſix months in the year, they are not affected with either. Their hearing is no leſs quick; and our author ſays they can ſmell fire at a vaſt diſtance, but what he means we do not rightly underſtand. Their fancy is ſo lively, and their memory ſo ſtrong, that if they have once travelled through the largeſt woods or deſerts, or ſailed over any of their ſeas, which they do without the help of a compaſs, they can retain all the neceſſary obſervations, ſo as to repeat the ſame courſe at any diſtance of time. As to their poſſeſſions, they are in ſome meaſure in common, for whatever one wants, the others are all ready to ſupply. If one has met with ill ſucceſs in his hunting, the reſt will aſſiſt him with ſome of their own proviſions; and in general they deſpiſe money to ſuch a degree, that they will not touch it, calling it the Serpent of the French, for the love of which they betray, rob, and kill one another.

The misfortune is, that travellers often contradict themſelves in the character they give of theſe people, ſome deſcribing them as one remove from wild beaſts, and quite incapable of being civilized, whilſt others repreſent them as gentle and hoſpitable, ſprightly, docile, and of a ſound judgment. But upon the whole, we need not be at a loſs to account for this difference of characters in ſo vaſt a tract of ground and ſuch variety of climates, where literature, commerce, religion, and laws, are almoſt ſtrangers.

What religion they have, conſiſts in ſome faint notion of a Supreme Being, to whom however they do not perform any outward worſhip, unleſs thoſe dances and ſongs, which they uſe at ſome particular times, be intended as ſuch. In all other caſes they ſeem to live without any love or fear of him, and to follow only the dictates of cuſtom and education. They have a great veneration for their old people, whom they always conſult in any emergencies, eſpecially in caſes of war, either offenſive or defenſive; for, like other Americans, they make alliances, and wage war, one canton or tribe againſt another; and though their wars are ſhort, they are generally bloody, and end in the captivity or ſlaughter of the weaker party.

This may ſuffice at preſent for an account of the natives of Canada; which country, the reader is to obſerve, is divided into eaſtern and weſtern, the former commonly known by the name of Canada, or New France, and the latter called Louiſiana, in honour of the late Lewis the Fourteenth, being in reality a large part of Florida, as it was originally named by the firſt diſcoverers; but the French have called it Louiſiana, ſince they made ſettlement in that country.

As to that part of Florida which borders on the Gulph of Mexico, it appears by a memorial preſented to King William the Third, that England had an undoubted title to it ever ſince the reign of Henry the Seventh, by whoſe commiſſion Sebaſtian Cabot diſcovered all that coaſt fronting the Atlantic Ocean, twenty years before it had been viſited by any other European. Then indeed the ſouthern part of this continent, towards the Gulph or Streights of Bahama, was viſited by the Spaniards under Juan Ponce de Leon, as it was ten years afterwards by Vaſquez Aillon; in 1527, by Pamphilo Navarez, and in 1534, by Ferdinando Soto; but their cruelty ſo enraged the natives, that they expelled them all one after another. The laſt expedition of the Spaniards thither was in 1558, by order of Valeſco, then viceroy of Mexico; but falling into diſſenſions among themſelves, they returned without making any ſettlements: nor have they ever ſince made any on that part of the continent, except at St. Mattheo, and St. Auguſtin.

But it is farther worth obſerving, that this country was called Carolana, by King Charles the Firſt, on a grant which he made of it to Sir Robert Heath, his Attorney General, the country being not then poſſeſſed by a Chriſtian power. Sir Robert conveyed Carolina to the Earl of Arundel, who was at the expence of planting ſeveral parts of it, and would have effected much more, had he not been hindered by the war with Scotland, and afterwards by the civil wars in England. It likewiſe appears from the memorial above-mentioned, that the Five Nations in the territory of New York, whom the French commonly call Iroquois, who have for about ninety years voluntarily ſubjected themſelves to the crown of England, and who had conquered all the country from their own habitations to the Miſſiſippi river, and even beyond it, made a ſale and ſurrender of their conqueſts and acquiſitions to the government of New York; which is another proof of their being the property of the Engliſh.

The memorial we are ſpeaking of, was preſented to King William, by the late Dr. Coxe, who by conveyances from one to another, after the death of the Earl of Arundel, became proprietor of Carolina; and who ſets forth, that at the expence of ſeveral thouſand pounds, he diſcovered divers parts of it, firſt from Carolina, and afterwards from Penſylvania. The ſon of this memorialiſt, Daniel Coxe, Eſq; who himſelf reſided fourteen years in America, has publiſhed a particular deſcription of this province of Carolina, giving an account of the animals, metals, vegetables, &c. And as he compoſed it chiefly from memoirs drawn by his father from ſeveral journals and iteneraries of the Engliſh, and from the relations of other travellers and Indian traders of good underſtanding and probity, who had paſſed through the heart of the country, we think we may venture to rely upon his authority in what we ſhall have occaſion to ſay concerning it.

As to the natives of Florida, authors tell us that both ſexes go naked, except a piece of deer-ſkin round their waiſts. Their legs and arms are painted with various figures, which are indelible; and they anoint their ſkin with a ſort of oil, which hardens them againſt the heat of the ſun. They have long black hair, which they have a method of combing, curling, and twiſting about their heads, ſo that it looks very agreeable. They are very dexterous in managing their weapons, which are bows and arrows, the latter pointed with ſharp ſtones or fiſh-bones. The women are remarkably graceful and well-ſhaped, and not only perform all domeſtic offices, but accompany their huſbands either to hunting or to war; on which occaſion it is ſaid they will ſwim over large rivers with their children on their backs. Their corn is laid up in common granaries, and diſtributed out to every family according to its number. Their uſual drink is water, but they are likewiſe fond of a liquor they call Caſſina, which they drink as we do tea: it is the infuſion of the leaves of a tree much valued, not only by them but by the Spaniards, for its diuretic quality.

Moſt of them are bigotted idolaters, worſhipping the ſun and moon, and have a great averſion to Chriſtianity. They are ſubmiſſive enough to their chiefs or heads of clans, who are called Paraouſti's, and are the commanders in time of war, and preſidents of their councils in time of peace. Their prieſts, whom they call Jaouna's, have a great influence over them, who wear long robes made of ſkin, always look grave, and live very abſtemiouſly. As prieſts, they pray and ſacrifice to the ſun; as magicians, they pretend to foretel future events, ſuch as the ſucceſs of their expeditions; and, as phyſicians, they bleed, vomit, and ſweat the ſick, till they either kill them or work a cure.

As to the Britiſh empire on the American continent, it chiefly lies along the ſea-coaſt, and conſiſts of Canada, New Scotland, New York, New Jerſey, Penſylvania, Maryland, Virginia, North and South Carolina, Florida, and Georgia. We ſhall not attempt to give the hiſtory of theſe ſettlements, as it may be thought that we have already wandered too far from our ſubject; but ſhall only take ſome notice of the Indians bordering upon our colonies, and then proceed to the curioſities of the northern part of America. The Indians of Carolina, Virginia, Maryland, and Penſylvania, ſeem to believe in one God, the Creator of all things, who is infinitely happy in himſelf, but has little or no concern with the affairs of mankind, having committed the government of the world to certain inferior deities or demons, to whom therefore the natives pay their devotions. They have a great regard to their prieſts or conjurers, as they may be called, and believe there will be a future diſtribution of rewards and puniſhments according to their behaviour in this life. The Indians about Penſylvania believe a God, and the immortality of the ſoul; for they ſay there is a great King that made them, who lives in a glorious country to the ſouthward, and that the ſouls of the good ſhall go thither. The other Indians of the more northern colonies, as far as we can learn, likewiſe acknowledge a Supreme Being, but ſeldom pay any religious worſhip to him, unleſs in public calamities, and then they offer ſacrifices of every thing they poſſeſs, and pray for deliverance from their miſery; they alſo offer thank-offerings for public bleſſings. When it thunders, they take it to be a ſign of God's diſpleaſure, and will ſay to one another, 'How angry he is!' They believe a future ſtate of rewards and puniſhments, but they have very obſcure notions of it, and ſeem to think that the rewards of the good will conſiſt in the enjoyment of thoſe pleaſures they were fond of in this world.

With reſpect to the reſt of their character, it may be ſaid in general, and more eſpecially of the Indians of Carolina, Virginia, Maryland, and Penſylvania, that they are a good-natured, generous people, very humane to ſtrangers, but revengeful and implacable when provoked. They are quick of apprehenſion, and gay of temper, feaſting and dancing almoſt perpetually. Their public conferences ſhew them to be men of genius, and that they have a natural eloquence, without the help of letters or education *; inſomuch that a perſon muſt

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* Mr. Smith, in his Natural Hiſtory of Nevis, &c. has given us the articles of friendſhip and commerce propoſed by the Lords Commiſſioners for trade and plantations to the deputies of the Cherrokee nation, on the borders of South Carolina, in the year 1730, and likewiſe the anſwer of the Indian chiefs to thoſe articles: and then he propoſes it as a quære, whether thoſe Indians have not ſhewn as great ſtrength of natural parts, as even the Lords Commiſſioners have done with all their learning and experience in ſuch affairs. As for the articles, we muſt refer the reader who is deſirous of ſeeing them to the above-mentioned author, they being too long to be here tranſcribed.

be wiſe indeed who outwits them in any treaty about a thing they underſtand. They are in general a manly, well-ſhaped race, tall, ſtrait, nimble, and indefatigable in their warlike expeditions, hunting, and journeys. They moſtly walk with a lofty chin; and take pains to darken their complexions by greaſing themſelves with bear's fat clarified, and expoſing themſelves to the ſun from their infancy. They are a very healthy people, having hardly any diſeaſes amongſt them, except the ſmall-pox, and thoſe occaſioned by drinking of rum and other ſtrong liquors, of which they are become great lovers ſince the Europeans came amongſt them. When they have any diſtemper, they are very impatient till cured, and will give any thing for that purpoſe, eſpecially for the recovery of their children, to whom they are extremely indulgent. But, after all we can ſay on this head, we are liable to uncertainty, their characters being given us variouſly by different writers.

SECT. II.

A particular Account of the moſt curious natural Productions of North America, *in the Animal, Vegetable, and Foſſil Kingdoms; of remarkable Mountains, medicinal and other ſingular Springs; and of Rivers, Cataracts, and other natural Objects of Curioſity.*

ANIMALS.

AMONG the moſt remarkable animals of North America is the Mooſe Deer, which is thought peculiar to that part of the world, and is one of the nobleſt creatures of the foreſt. Theſe deer are found no where in greater numbers than in New England; and we are informed, that there are two ſorts of them, the Common Light-grey, and the Large or Black Mooſe. The former, which the Indians call Wampooſe, are more like the ordinary deer, ſpring like them, and herd ſometimes to the number of thirty together. The Black Mooſe, whoſe hair is dark-grey, is ſhaped much like the common deer, parts the hoof, chews the cud, and has no gall: his ears are large and erect, and he has a very ſhort bob tail. Theſe deer are not ſo gregarious, not above four or five being found together. The hunters in New England have taken a Buck or Stag

Mooſe of the black kind, ten feet and a half high, from the withers; and a quarter of this veniſon has weighed upwards of 200 pounds. A Black Mooſe Doe or Hind of the fourth year was killed near Boſton, which, from the noſe to the tail, meaſured between ten and eleven feet, and was ſix feet eleven inches high. The horns of the Mooſe, when full grown, are between four and five feet from the head to the tip, each horn having ſeven ſhoots or branches, and they generally ſpread about ſix feet. When the horns, which are ſhed every year, firſt come out of the head, they are round like thoſe of an ox, but about a foot from the head they begin to grow a palm broad, and higher up ſtill broader, ſo that the Indians make ladles of them that will hold a pint. When a Mooſe goes through a thicket, or under the boughs of trees, he lays his horns back on his neck, not only that he may make his way the eaſier, but to prevent his being ſcratched or hurt by the wood. A Mooſe does not ſpring, or riſe in going, as a common deer, but rather ſhoves along ſide-ways; and when he is unharboured, he will run a courſe of twenty or thirty miles before he turns about or comes to a bay. He is not ſo ſwift as the common deer, but will run longer; and when he is chaſed, he uſually take to the water. One of theſe large black Mooſes has been ſeen, in his common walking, to ſtep over a gate or fence five feet high.

The fleſh of the Mooſe is excellent food, and, though it be not ſo delicious as common veniſon, it is more ſubſtantial, and will bear ſalting. The noſe of the animal in particular is reckoned a great dainty; and Mr. Dudley, who eat ſeveral of them, ſays he found them to be perfect marrow. The ſkin of the Mooſe well dreſſed, makes excellent buff, and the Indians make their ſhoes of this ſkin for travelling in the ſnow. Their way of dreſſing it is this: After they have haired and grained the hide, they make a lather of the Mooſe's brains in warm water; and after they have ſoaked the hide for ſome time, they ſtretch and ſupple it. Nor is the fleſh and ſkin of the black Mooſe the only parts of it that are ſerviceable, for even the hair on the ridge of his back, which is ten or twelve inches long, is made into good belts by the Indians. A Mooſe generally brings forth two young ones, which it is ſaid to do ſtanding, and the young fall from the dam upon their feet.

Theſe creatures being very tall, and having ſhort necks, do not graze on the ground like the common deer, horſes, cows, &c. and if at any time they eat graſs, it is the top of that which grows very tall, or on the ſide of a riſing ground. In the ſummer they feed on plants, herbs, and young ſhrubs that grow on the land, but are moſt fond of water-plants, eſpecially a ſort of wild colts-foot and lilly, which abounds in ponds and by the ſides of the rivers. For this food the Mooſe will wade far and deep; and it is by the noiſe they make in the water that the hunters often diſcover them. In the winter they live by browzing on the tops of buſhes and young trees; and being very ſtrong, as well as tall, they will bend down a tree as thick as a man's leg. When the browze fails them they will eat off the bark of ſome ſorts of trees as high as they can reach. They generally feed in the night, and lie ſtill in the day *.

The Mexican Muſk Hog, ſo called from its ſcent, is a remarkable animal, found not only in New Spain, but in ſeveral other parts of the American continent. Dr. Tyſon had one which he had the curioſity to diſſect, and he deſcribes it as much leſs than our common hogs; for from the end of the body where the tail ſhould be, if it had one, to the top of the head between the ears, it meaſured only two feet two inches, and from thence to the extremity of the ſnout eleven inches. The compaſs of the body was two feet, that of the neck ſixteen inches, of the head in the largeſt place eighteen inches, and of the ſnout twelve inches; for the

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* To this account of the American Mooſe Deer, it is proper to add an obſervation of Dr. Molyneux, in the Philoſophical Tranſactions, who there deſcribes a large pair of deer's horns dug up in Ireland, which from the tip of the one to that of the other were ten feet ten inches wide. Theſe horns he doubts not belong to a Mooſe; and from the number of them found in ſeveral parts of Ireland, he concludes that theſe majeſtic deer were formerly as frequent in that country, as they are now in New England, Canada, Maryland, and Virginia.

the lower jaw of this hog was more protuberant, and the head leſs tapering than in our ſwine. Its body was of a grizzly colour, and beſet with briſtles, which were thicker than thoſe of a hog, yet ſmaller than thoſe of a hedge-hog, but reſembling them, or the quills of a porcupine, and variegated with rings of black and white. The belly was almoſt bare, and the briſtles on the ſides were ſhort, but gradually increaſed in length as they approached the ridge of the back, where ſome were five inches long. On the head between the ears there was a large tuft of theſe briſtles, which were moſtly black. The ears were about two inches and a half long, and pricking up; and the eyes, like thoſe of pigs, were ſmall. The ſnout was like that of a hog, but the mouth ſmall; and one ſide of the lower lip was made ſmooth by the rubbing of the tuſk in the upper jaw. The feet and claws were perfectly like thoſe of common hogs. It had no tail, as was intimated above; but its greateſt peculiarity, and what diſtinguiſhes it from any other animal, is the navel, or rather foramen, on the hinder part of the back. Theſe animals are uſually found in the woods and mountains, and go in herds together. They feed on roots, acorns, and fruits; but, as the greateſt dainty, they hunt after all manner of ſerpents and toads, and having caught them, they hold them with their fore feet, and with a great deal of dexterity ſtrip off the ſkin with their teeth from the head to the tail, and then greedily devour them. As an antidote againſt the poiſon, they are ſaid to eat the bark of a certain tree; and by this ſort of food they thrive and become fat. They are naturally very fierce; and if one of them be wounded, he preſently gets to his aſſiſtance a great number of his kind, and never deſiſts till he is ſlain or has revenged the injury. They are always at enmity with the tygers, and oftentimes the body of a tyger, and ſeveral of theſe hogs, are found dead together. If they ſpy a man, they will attack him fiercely, and his beſt refuge is to get up a tree, which they will aſſault moſt furiouſly with their teeth; nor will they eaſily leave him till they are called off by hunger. When they are hunted they often tear the dogs to pieces. Their fleſh is eſteemed very good, and is much coveted by the natives.

Some authors call this animal Tajacu.

The peculiarity above-mentioned, called the navel, ſeems to require a little cloſer obſervation. It is ſituated juſt on the ridge of the back over the hinder legs, and is ſo covered by the long briſtles there, that it cannot be ſeen without opening or ſeparating them with the hands, and then you find a ſmall ſpace almoſt bare, only beſet with fewer, ſhorter, and finer hairs. In the middle of it is the orifice of the gland, by which it diſcharges itſelf of the liquor it ſeparates; and this orifice has its lips a little reflected and protuberant above the ſurface of the ſkin. Dr. Tyſon found it would eaſily admit of a large probe, which could be turned into ſeveral parts of the gland; and upon a gentle preſſure with the fingers, it emitted a ſmall quantity of a yellowiſh juice, which yielded a very agreeable ſcent, much like that of muſk or civet. This gland is of the conglomerate kind, conſiſting of ſeveral other minute glands. It has no conſiderabl cavity within it, but has ſeveral excreto ducts, which terminating at laſt in one, di charges its ſecret juice by a common orifi This orifice, having ſome reſemblance to navel, has impoſed upon almoſt every auth that has written on that animal, ſo far as take it for a real navel; and others, who ha not fallen into this ſentiment, have propo conjectures about it full as abſurd and ext vagant: but there is nothing, according to D Tyſon, to which it can be more fitly compare than to the ſcent-bags in other animals.

We have heretofore given ſome account o the Beaver, and of its bags or purſes contai ing a liquid matter called Caſtoreum, of con derable uſe in medicine *; but there are ſo other ſurpriſing particulars related of th animals, which it is proper to take notice here, becauſe Canada abounds with them mo than any other part of the world. In t Memoirs of the Royal Academy of Scienc there is an extract of a letter from M. Sarra the French King's phyſician in Canada, con-

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* See Vol. IX. p. 26. & *ſeq.*

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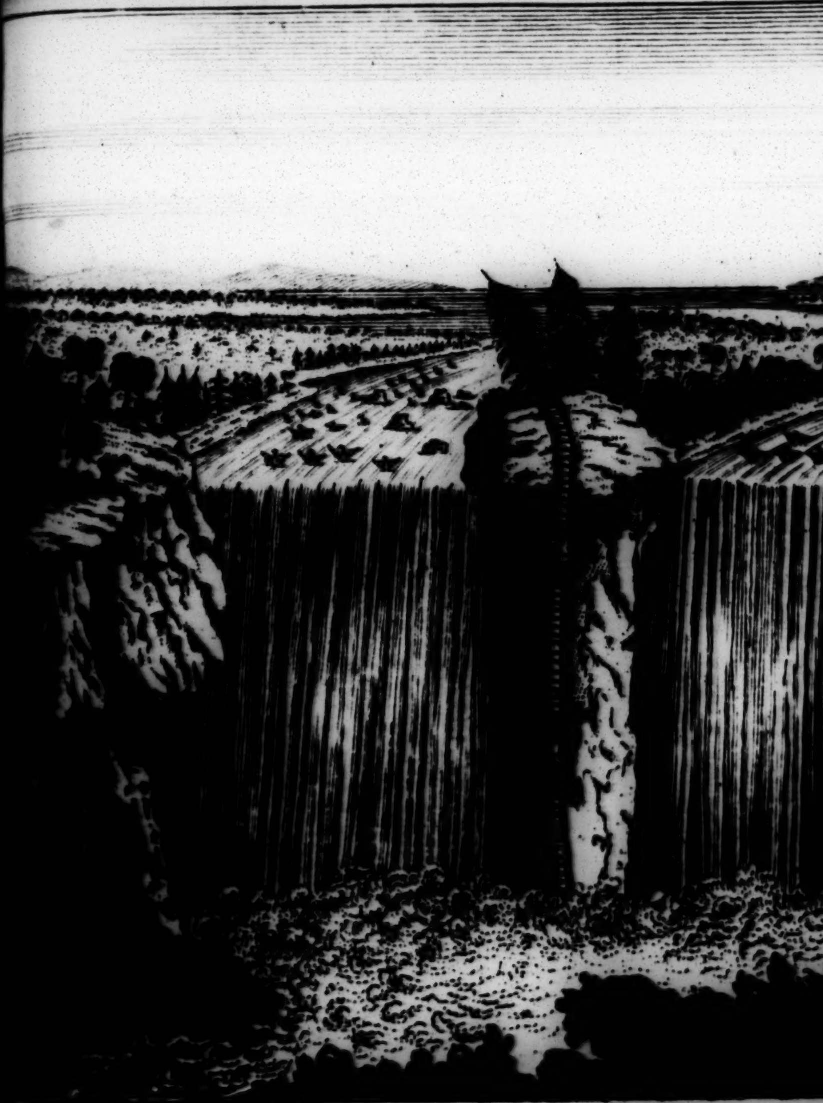
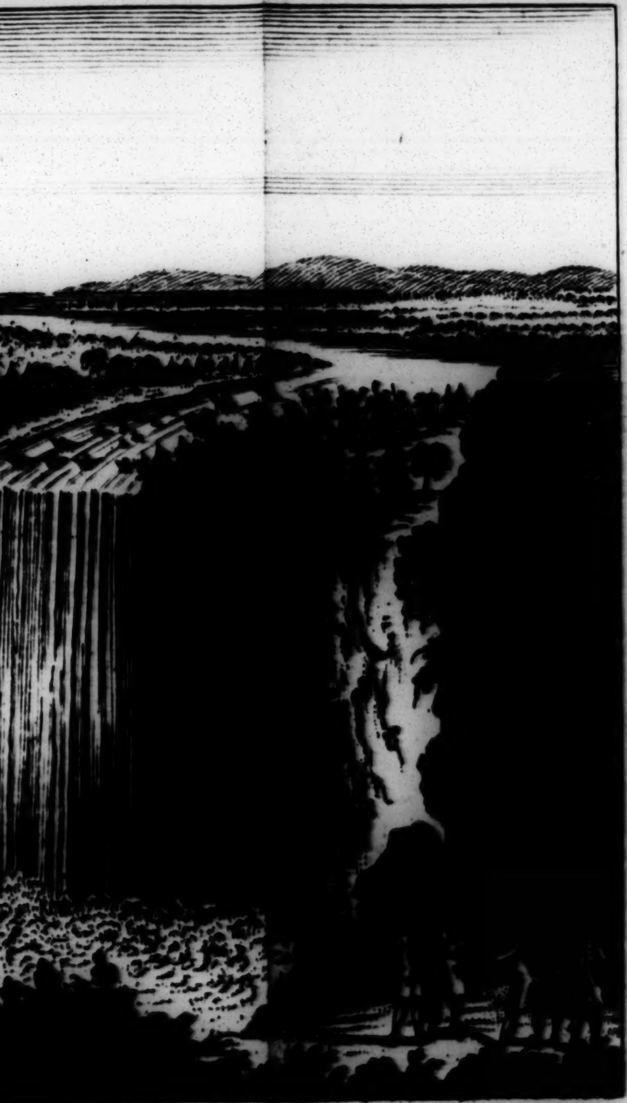


A View of the Fall of Nia


Hulett. Sculp

Niagara .

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cerning the diſſection of a Beaver. He ſays, the largeſt are three or four feet long, and about twelve or fifteen inches broad, in the cheſt and haunches; that they commonly weigh about fifty pounds; and that they uſually live to the age of twenty years: but Francus ſays they live thirty or forty years, and that he had heard of a tame one being kept ſeventy-eight years. Dr. Sarraſin ſays farther, that a great way north, the Beavers are very black, though there are ſome white; but thoſe of Canada are commonly brown, and their colour grows lighter, as they are found in more ſouthern countries.

Theſe creatures, according to the accounts of travellers, obſerve a wonderful polity, and their manner of living and building their habitations ſhews an extraordinary inſtinct implanted in them by the great Author of nature. In order to raiſe themſelves a convenient abode, they chuſe a low level ground, watered with a ſmall rivulet, where, by making dams acroſs it, they can form a reſervoir of water and overflow the ground. Theſe dams or cauſeys are formed by thruſting down ſtakes five or ſix feet long, and as thick as a man's arm, deep into the earth; and theſe they wattle acroſs with tender pliable boughs, and fill up the ſpaces with clay, making a ſlope on the ſide againſt which the water preſſes, and leaving the other perpendicular. One of theſe dikes may be ten or twelve feet thick at the foundation, and they raiſe it in height proportionably to the water's elevation and plenty. As they are ſenſible that materials for building are not ſo eaſily tranſported by land as by water, they take the opportunity of ſwimming, whenever they can, with clay placed on their tails, and ſtakes of wood between their teeth, to every place where thoſe materials are wanted. If the violence of the water, or the footſteps of the hunters who paſs over the work, ſhould damage it in any degree, they immediately viſit all the edifice, and with indefatigable application repair and adjuſt whatever they find out of order: but if they are too frequently diſturbed by the hunters, they only work in the night, or elſe diſcontinue their labours.

When the Beavers have compleated their cauſey or dike, they begin to form their cells, which are round or oval apartments, divided into three partitions or ſtories, raiſed one above another. The firſt is ſunk below the level of the dike, and is generally full of water; the other two are formed above it. The walls of theſe houſes are upright, and about two feet thick; and they are always built in ſtories, that in caſe the water riſes, the Beavers may retire to a higher ſituation. The materials are the ſame as they uſe for the dike; and as their teeth ſupply the place of ſaws, they cut off all projections that ſhoot out from the ſtakes, beyond the perpendicular of the wall; after which, they work up a mixture of clay and dry graſs into a kind of mortar, and by means of their tails, they lay it over the building, both

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within and without. They likewiſe drive ſtakes into the earth to fortify the ſtructure againſt the winds and water; and at the bottom they ſtrike out two openings to the ſtream, one of which leads to the place where they bathe, and the other is a paſſage to that quarter where they carry out every thing that would ſoil or rot the upper apartments. There is a third aperture much higher, calculated to prevent their being ſhut up when the ice hath cloſed the openings into the lower lodgments. The dimenſions of their houſes are proportioned to the number of their intended inhabitants, twelve feet in length and ten in breadth, being found ſufficient for eight or ten Beavers; and if the number encreaſes, they enlarge the building accordingly. It has been aſſerted for truth, that there have been found above four hundred of theſe creatures in different apartments communicating with one another; but theſe populous ſocieties are very rare, becauſe they are too unmanageable, and the Beavers are generally better acquainted with their own intereſts. They aſſociate to the number of ten or twelve, and ſometimes a few more, and ſo paſs the winter together in a very agreeable manner.

There are ſome Beavers called Terriers, which burrow in the earth, beginning their hole at ſuch a depth under water as they are ſenſible it will not freeze at; and this they carry on for five or ſix feet, juſt big enough for them to creep through. Then they make a bathing-place three or four feet ſquare, from whence they continue the burrow, always aſcending by ſtories, that they may lodge dry, as the water riſes. Some of theſe burrows have been found to be a hundred feet in length.

This is Dr. Sarraſin's account of the Terriers, but others ſay they begin their burrow on the land, and having dug downwards to a proper depth, they then dig horizontally till they come to the water.

The Beavers of Canada have generally compleated all their works in Auguſt or September, after which they furniſh themſelves with proviſions for the winter. During the ſummer, they regale themſelves with all the fruits, plants, and roots the country produces; but againſt winter, they lay up a ſtock of wood, which they feed upon, after ſteeping it in water, and this in quantities, proportionable to their neceſſary conſumption. They gnaw off twigs and branches from the trees, of which the large ones are conveyed to the magazine by ſeveral Beavers, and the ſmaller by a ſingle one; and it is obſerved, that they take different ways, each having his walk aſſigned him, that they may not interrupt one another in their labour. The dimenſions of their pile of wood are regulated in proportion to their numbers, and we are told, that one of twenty-five or thirty feet ſquare, and eight or ten feet high, is the uſual proviſion for eight or ten Beavers. When the wood is ſoaked in water, they gnaw it into ſmall pieces, and convey it to their cells, where it is regularly divided amongſt them. Sometimes they expatiate in the woods, and regale themſelves and their young with a freſh collation; for they love green wood better than that which is old and withered: and the hunters, ſenſible of this, place a parcel of the former about their habitations, and then have ſeveral devices to enſnare them. When the winter is ſevere, and the water frozen over, the hunters ſometimes break the ice, and when the Beavers come to the opening, for the benefit of the freſh air, they kill them with hatchets; or elſe they cover the aperture with a ſtrong net, and then overturn their lodge, upon which the poor animals thinking to eſcape, by betaking themſelves to the water, and emerging at the hole in the ice, fall into the ſnare, and are taken.

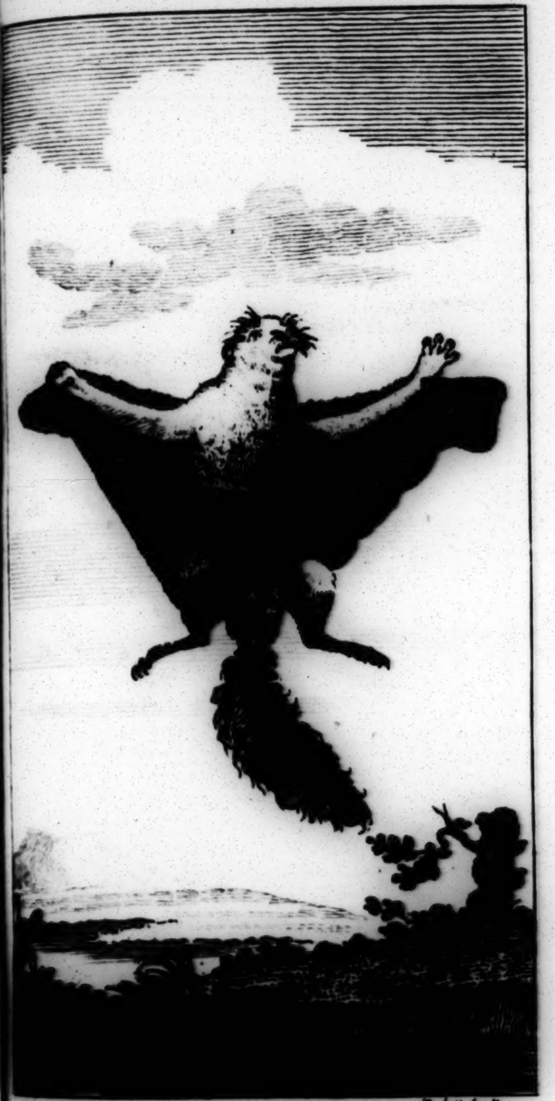
Many other things are related concerning the ſagacity and induſtry of theſe creatures, the ſtrength and beauty of their little cities, o. the wars which one canton wages againſt another, and of their putting the moſt laborious part of their work upon thoſe they take priſoners, &c. all which, though ſeemingly well atteſted, are yet looked upon by the generality as too much exaggerated to deſerve any credit.

There is another animal, common enough in ſeveral parts of America, called a Muſk rat, which is exactly ſhaped like our water-rat, only ſomewhat larger. Theſe creatures build houſes as the Beavers do, in marſhes, by the water-ſide, with two or three ways to them; and the inſide of them is neatly plaiſtered. They conſiſt of three ſtories, ſo that the rats aſcend from one into the other, as the water riſes. In ſhort, they are, in all reſpects, Beavers in miniature, and therefore any farther account of them is unneceſſary.

In North-America, we meet with ſeveral kinds of Squirrels, particularly one called the Ground-ſquirrel, which is little larger than a mouſe, and is finely ſpotted like a young fawn. It is a ſort of dormouſe, only different in colour.

Thoſe called Fox-ſquirrels, which are much larger than the Engliſh Squirrels, are very numerous in Virginia. They are almoſt as grey as a common rabbet, and are reckoned as good food.

But one of the greateſt curioſities in Virginia, though it cannot be ſaid to be peculiar to that country, is the Flying Squirrel, ſo called from its being provided with a ſkin that can be expanded from each ſide, like a ſail, and greatly aſſiſts it in leaping from one bough to another; inſomuch, that though it is ſmaller than the Fox-ſquirrel, and even than the leaſt of our ſquirrels in England, it can jump much farther. M. Klein tells us, that in the year 1727, two of theſe flying ſquirrels were brought alive to Warſaw, and preſented to Auguſtus the



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The Flying Squirrel.

BIBLIOTHECA BODLEIANA

the Second, King of Poland; and in the year 1728, M. Klein had one of theſe ſquirrels given him, which was taken in the woods, on the confines of Ruſſia, and was much leſs than the common Squirrel. Its ſkin was very ſoft, of a beautiful dark-grey colour, and its eyes were large, black, and prominent. It had ſmall ears, and very ſharp teeth; but, though moſt of them are miſchievous enough, this was pretty gentle, and would not bite, unleſs it was provoked. They fed it with bread baked without ſalt, but the freſh tops of birch were its favourite food, it neither caring for nuts or almonds. The little creature made its bed in an elegant manner, of the moſs of the birch, in which it would lie buried, as it were, and not ſtir from thence in the day-time, unleſs diſturbed, or thirſty. As to the membrane, which may be called its flying inſtrument, it might be expanded from each ſide about the breadth of a palm, and adhered to the bending of the hinder feet, but was connected with the fore feet by a bony articulation. Upon the whole, M. Klein concludes, that this animal does not properly fly *, but that it can leap from place to place, with greater eaſe than other

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* Such animals are properly called flying, as roam about freely in the air, and not ſuch as only leap with agility from one tree to another. Nay, it has been much doubted by ſome, whether there is any ſuch thing in nature as a flying quadruped; but the common bats put the matter out of diſpute,

other Squirrels, and by means of its ſails continue longer in the air.

The conſideration of the Flying Squirrel naturally leads us to take a view of ſome of the feathered race, whom nature has furniſhed with wings, that enable them to expatiate in the air, that is, to fly, in the true and proper meaning of the word. Of all this tribe, here is none more deſervedly admired than that curious and beautiful little animal, called the Humming-Bird, of which there are ſeveral ſpecies, to be met with in moſt parts of the American continent, as well as in many of its iſlands. The ſmalleſt ſort of Humming-birds, according to Mr. Smith, is conſiderably leſs than a wren; and according to all accounts, it is the leaſt bird in the world. Mr. Hamerſly, in *Phil. Tranſ.* No. 200, tells us, that the leg and foot together, are about half an inch, and the whole body not quite an inch in length. Upon weighing one as ſoon as it was killed, it was found to be only the tenth part of an ounce avoirdupois, which is much about the weight of a ſixpence; whereas a Titmouſe, the ſmalleſt bird in England, weighed above two ſhil-

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pute, to ſay nothing of the Dracunculi preſerved in ſeveral muſeums.

Something like the flying ſquirrel, or perhaps the ſame, is the *Felis Volans*, or Flying Cat of Scaliger; and of the ſame nature, but larger, is the *Veſpertilio admirabilis*, the Wonderful Bat of Bontius.

lings. The ſame gentleman tells us, that its eggs are about the bigneſs of a pea; and Mr. Winthorp, who weighed two of them, found one to be about five grains, and the other only three and a half. As to its colours, they are various, and ſurpriſingly beautiful, though the bird is differently deſcribed by different authors. De Laet repreſents it as having all the colours of the rainbow, the ends of the wings being of a golden colour, as alſo its belly; the ſides green as an emerald, with a green tuft of feathers on its crown, a circle round its neck as red as a carbuncle, the bill and legs black as jet, and the eyes like diamonds. Mr. Smith ſays, its colour is like that of a peacock's neck, in that part where the black ground is finely ornamented with a gliſtening greeniſh blue; and Mr. Hamerſly deſcribes it to be of a ſhining green colour, ſomewhat reſembling the head of an Engliſh drake.

But though authors differ a little in their deſcriptions of the Humming-bird, all agree that its plumage is extremely beautiful.

It is natural to ſuppoſe this little creature obtained its name from the humming noiſe it makes in its flight, almoſt like that of a ſpinning-wheel, occaſioned by the ſwift motion of its wings; and yet Mr. Hamerſly ſays, he never obſerved any ſuch thing. It is a ſolitary bird, no more than two being ſeen together at a time, viz. the male and female; and they are eaſily diſtinguiſhable, the former being ſomewhat bigger than the latter. They feed by thruſting their ſlender bill and tongue into the bloſſoms of trees and other flowers, from whence, like bees, they extract the ſweet juices; and this they do upon the wing, hovering over the flower without perching. They can fly very ſwiftly; and Mr. Smith tells us, he has known one of them give chace to a hawk, though he imagines the diminutive ſize and agility of the bird were its only protection. Some writers however, repreſent the Humming-Bird as formidable to the hawk on account of his ſharp bill, which is as fine as a needle, and with which he pierces the ſides of his enemy, clinging faſt to him with his little talons: but this we apprehend is fabulous.

The neſt of the Humming-bird is curiouſly contrived, being made of cotton-wool, in form and bigneſs, like the thumb of a man's glove, and uſually built at the extremity of the branches of the Tamarind, or other trees. Theſe birds are ſeldom ſeen on the ground, but fly about the gardens, from one flower to another. They are ſeen only in ſummer, and are very difficult to keep alive for want of their natural food; though Mr. Clayton ſays, they have been kept, and fed with water and ſugar.

The next curioſity among the feathered inhabitants of North-America, may be reckoned the Mocking-Bird, ſo called from its imitating the notes of all other birds, which, with the many charming ones of his own, make him ac-

accounted the fineſt ſinging-bird in the world. There are two ſorts of them, the grey and the red, both about the ſize of a thruſh; but the former is moſt eſteemed, as having the ſofter note. Its feathers are much of the colour of our grey plovers, with white in the wings like a magpye; and its poſtures in flying are very odd, ſometimes with its tail upright and its head down, and ſometimes the contrary. It is a briſk bold bird, and yet ſeems to be of a tender conſtitution, neither ſinging in winter, nor in the middle of ſummer, and with much difficulty are any of them brought to live in England. It ſings not only by day, but alſo at all hours of the night, on the tops of chimnies.

There are two ſorts of Virginia Nightingales, or Red Birds, the one with a tuft on his head, and the other quite ſmooth-feathered. The cocks of both ſpecies are of a pure ſcarlet, and the hens of a duſkiſh red.

In the ſame country, they have a bird called a Blue Bird, being of a beautiful azure colour, and about the bigneſs of a chaffinch; and they have ſeveral ſorts of goldfinches, finely variegated with red, orange, and yellow feathers.

There is another bird, very injurious to corn, called a Black-bird, being as black as a crow, only ſome of them have ſcarlet feathers in the pinions of their wings. They ſeem to be a ſort of ſtarlings, for they cry like them, but do not ſing, and are much of the ſame bigneſs.

The Jay of Virginia is leſs than our Engliſh Jay, and the body of it is blue, whereas ours is brown. Its wings are curiouſly marbled, as thoſe of ours are; and it has the ſame cry, and ſudden jetting motion.

In their Woodpeckers, there is great variety; one ſpecies of them is as big as a magpye, with blackiſh brown feathers, and a large ſcarlet tuft on the top of the head; beſides which, there are four or five ſorts more, ſome with green, yellow, and red heads, and others ſpotted red and white in a very beautiful manner.

In Virginia, Mr. Clayton informs us, there are three ſorts of Eagles; the largeſt of which they call the Grey Eagle, being much of the colour of our kite or glead: the ſecond is the Bald Eagle, ſo called becauſe the body and part of the neck and head are only covered with a whitiſh ſort of down; and the third is the Black Eagle, much reſembling thoſe of our own iſland. Theſe build their neſts on the top of ſome tall old tree, ſtripped of its boughs, and near the ſide of a river; and the people uſually fell the tree when they take the young. When the Eagle obſerves that the fiſhing-hawk hath ſtruck a fiſh, he takes wing immediately, and purſues the hawk, which chace affords the ſpectator an agreeable entertainment;

ment; for as ſoon as the hawk perceives himſelf purſued, he ſcreams, and makes a terrible noiſe, till at length, in order to ſave himſelf, he drops the fiſh, which the Eagle frequently catches before it reach the earth or water. Theſe Eagles kill young lambs, pigs, &c.

The Fiſhing Hawk is a ſpecies of the King's fiſher, and much reſembles that bird in ſhape and colour, though it is larger, and not quite ſo curiouſly feathered.

Several ſorts of Owls are found in Virginia, and our other colonies, particularly brown and white Owls, which are as large as a gooſe, and often kill hens and other poultry in the night. The white Owl has a delicate plumage, the feathers on the breaſt and back being white as ſnow, and tipped with a jet black.

They have likewiſe a large ravenous kind of bird, that feeds on carrion, almoſt as big as an eagle, called a Turkey-buſtard, having red gills, reſembling thoſe of a turkey, from whence its name. It ſeems to be a ſpecies of the kite, hovering on the wing, like that bird, and being carnivorous. Its fat, diſſolved into an oil, is much recommended in the ſciatica, and any old aches and pains.

Nor ought we to forget their wild Turkeys, which are remarkable for their ſize, ſome of them weighing fifty or threeſcore pounds. Their legs are very long, and they run exceeding ſwiftly. Their feathers are of a blackiſh ſhining colour, reſembling thoſe of a dove's neck, when viewed in the ſun-ſhine.

They have alſo ſeveral ſorts of Herons, one larger than the Engliſh, and feathered like a gooſe; and there is another ſpecies which come only in ſummer, and are milk white, with beautiful red legs.

Add to this, that their cocks and hens are, for the moſt part, without tails and rumps; and thoſe of the Engliſh fowls rot off, after they have been ſome time in the country.

Mr. Clayton tells us, that they have ſeveral ſorts of Frogs in Virginia, and one in particular, of a prodigious ſize, being eight or ten times as big as any in England. It makes a noiſe like the lowing of a bull, or the hollow ſound of a bittern. There is another ſmall ſort of frog, ſays our author, which, during the ſpring, makes a noiſe like pack-horſe bells; and a third ſort, which is green, and will take ſurprizing leaps, on which account, it is called the Flying-frog.

Beſides the Rattle-ſnake, of which we have ſpoken ſufficiently already, they have one called the Blowing-Snake, which is a ſort of Viper, and has its name from its blowing and diſtending its head before it bites. Its poiſon, without a ſpeedy remedy, is mortal; and there is another dangerous kind of Snake, called the

Red Snake, being of a dark-brown colour, inclining to red. Their bellies are of a duſky white, with a ſtreak of red on each ſide.

The Horn-Snake is another remarkable ſpecies, ſo called from a horn on its head, with which it gives a wound as mortal as the bite of the Rattle-Snake.

That called the Corn-Snake, from its being frequently found in corn-fields, is much like the Rattle-Snake in colour, but the chequers are not ſo regular, nor is its bite venomous.

Amongſt the curious animals of North-America, we may reckon the little inſect which affords that valuable drug called Cochineal, of great uſe in dying crimſons and ſcarlets, and eſteemed in medicine as a cardiac and alexipharmic. Naturaliſts have been ſtrangely divided with reſpect to the origin of Cochineal, ſome referring it to the vegetable, and others to the animal kingdom; to which laſt it is now proved to belong by inconteſtable evidence: for a diſpute ariſing between Melchior de la Ruuſcher and a friend of his on this ſubject, the former procured from Antequera in New Spain, the place where there is the greateſt trade for this drug, the atteſtations upon oath of eight perſons, who had been for many years immediately employed in managing and propagating cochineal, from whence we learn the following particulars. Firſt, that they are ſmall animals, with a beak, eyes, feet, and claws; that they creep, climb, ſeek their food, and bring forth young, without that transformation obſervable in ſilk-worms, and other inſects. When they firſt begin to move, they are no larger than nits, or ſmall mites, or the point of a needle, but when come to maturity, they reſemble a dog's tick, both in ſize and figure. Thus far is certain, but the manner of their generation is doubtful; though it is commonly believed by thoſe who cultivate them, that they are impregnated by a ſmall Butterfly, which is bred upon the Nopal, the plant they feed upon, and which is obſerved to paſs and repaſs over them frequently.

When theſe little animals can bear the open air, which is early in the ſpring, they ſoon grow large enough to produce young ones; at which time, they put twelve or fourteen together, into a paſtle, or little neſt, made of fine ſoft hay or ſtraw, or the moſs of trees, or the down that immediately encompaſſes the cocoa-nut. Theſe neſts are placed upon the Nopal, or prickly Indian fig-tree, which is carefully cultivated for this purpoſe; and in three or four days, a great many young ones are produced, after which, the old ones die. The young ones, coming out of their neſt, climb up the Nopal, fix themſelves to it, and ſuck its juice, which is their only nouriſhment, for they do not eat the plant; and therefore they ſeek out thoſe parts of it that are greeneſt and fulleſt of juice, taking care to place themſelves ſo as to be ſcreened from the wind and weather. During this time, whilſt they are growing up, and become pregnant, great care is taken that no vermin incommode or kill them, and alſo to keep them clean, and diſengage them from certain threads like cobwebs, that grow upon the Nopal. They are likewiſe to be ſheltered from too much heat or cold, and from the rain and wind, for the fineſt of theſe inſects are very tender. The wild ſort, indeed, bear all theſe inconveniences; but then they are gritty, of an ill ſmell, and of little value.

As to the gathering of Cochineal, they firſt take the females, which die in their neſts, after having brought forth their young; and three or four months after this, as the ſeaſon permits, when the firſt young ones are become large enough to bring forth, and have produced ſome few, the Indians carefully gather them off the Nopal, with a ſmall bruſh, like a pencil. Being thus collected, the little creatures are killed by hot water or fire, and are called the ſecond gathering, or rather the firſt of the young ones that have been nouriſhed and raiſed in the open air. In three or four months more, they gather the ſecond brood of thoſe that have been brought forth upon the Nopal, and have likewiſe produced ſome young ones; which is done much in the ſame manner as before, only now they take from the plant a great many young ones, with their parent inſects; and from the number of ſmall ones, found amongſt this gathering of Cochineal, it is called Granilla. In the mean time, they keep a number of theſe young ones alive upon the Nopals, which they pluck up, or cut down, and take them into their houſes, in order to nouriſh the inſects, during the rainy ſeaſon. Laſtly, when theſe are grown large, they put them into the paſtles, and proceed in the manner above related; ſo that they uſually make three gatherings in a year.

They have two ways of killing theſe inſects, either in hot water, or in little ovens, made for that purpoſe; and ſome people kill them, by roaſting them upon flat ſtoves with fire under them, ſuch as the Indian women uſe to bake their bread. Theſe three different methods give the cochineal three different colours. The firſt makes it of a brown red, the hot water taking off the whiteneſs that covers the inſect when alive. The ſecond makes them of an aſh-colour, and marbled; and the third makes them black as if they had been burnt.

Of the old ones, that die after bringing forth their young, four pounds, when dried, produce but one; or rather one pound is reduced to four ounces: but three pounds only of the living ones, that have been carefully taken off the Nopals, being killed and dried, produce the ſame quantity.

This is the ſubſtance of the atteſtations above-mentioned, which contain ſeveral circumcumſtances before unknown in Europe; and hence the curious may be aſſured of the truth of a thing, which for many years, was a matter of uncertainty, and underſtood only ſuperficially by thoſe who allowed that cochineal was really little animals. That there may always be a ſtanding proof of theſe facts, the original atteſtations, confirmed by the certificates of three magiſtrates, and three public notaries, are depoſited among the regiſters of the Royal Society.

However, it ſeems proper to obſerve, that though cochineal is now known to be produced by an animal, there is a berry growing in America, which yields a dye almoſt as beautiful as that of the inſect. The firſt ſhoots of the tree produce a yellow flower, then comes the fruit, which is long, and opens when ripe, with a cleft of three or four inches. This fruit is full of kernels or grains, which fall on the leaſt agitation, and are carefully gathered by the Indians. Eight or ten of theſe fruits will yield about an ounce of grain; and a perſon may eaſily take it for the animal cochineal, but this laſt is much the moſt eſteemed.

As we are now ſpeaking of inſects, it may not be amiſs to introduce here an account of a method in New-England, of diſcovering the hives or neſts of bees in the woods, in order to get their honey. For this end, the hunter, as we may call him, in a clear ſun-ſhiny day, takes a plate or trencher with a little ſugar, honey, or moloſſes, and when got into the woods, he ſets it down on a rock, or ſtump of a tree. This is ſoon found out by the bees, which are generally ſuppoſed to ſmell honey or wax at above a mile's diſtance. When they are gathered about the plate, and have fed a little while, the hunter ſecures a few of them in a box, or other conveniency, and after a ſhort time, he lets one of them go, obſerving very carefully the courſe he ſteers; for after he riſes in the air, he flies directly on upon a ſtrait courſe to the tree, which contains the hive or neſt. Now the hunter being provided with a pocket-compaſs, a rule and other implements, with a ſheet of paper, he ſets down the courſe of the Bee, ſuppoſing it weſt, or any other point; and by this he was ſure the tree muſt be ſomewhere in a weſt line from his ſtation: but to know the exact diſtance, he removes from thence either north or ſouth, ſuppoſe a hundred perches, or if it be more, it will be the more exact, becauſe the angle will not be ſo acute. He then lets go another Bee, obſerving his courſe alſo very carefully; for this, like the firſt, after mounting to a convenient height, flies directly to the hive; ſo that the hunter has nothing to do but to find where the courſes of the firſt and ſecond Bee interſect each other, and there is the tree where the honey is lodged.

All this is founded on the ſtrait or direct motion of Bees, when bound home with their honey, which is found to be certain, by the conſtant obſervation and experience of the hunters, who of late have uſed this mathematical way of finding honey in the woods, with great ſucceſs. But it is worth obſerving, that all the Bees they have either in their gardens or woods, which are now in great numbers, are the produce of ſuch as were carried from England, about a hundred years ago; for the firſt planters in New-England, as Mr. Dudley informs us, never obſerved a Bee in the woods, till many years after the country was ſettled: and what proves this beyond diſpute, is, that the Indians have no word in their language for a Bee, as they have for all animals that are natives of the country, and therefore uſed to call a Bee by the Name of the Engliſhman's Fly.

Let us now take a view of ſome of the inhabitants of the waters, both of the ſeas and rivers, belonging to the northern part of the American continent: and amongſt theſe we ſhall ſcarce find any more remarkable, than an animal deſcribed by Mr. Glover, in his account of Virginia, publiſhed in the Philoſophical Tranſactions. This gentleman tells us, that in the river Rapahannock, he ſaw a ſtrange creature, much reſembling a man, but ſomewhat larger, ſtanding upright, with his head, neck, ſhoulders, breaſt and waiſt above water. His ſkin was tawny, much like that of an Indian; the figure of his head was pyramidal, without hair; his eyes large and black, as were alſo his eyebrows; his mouth was very wide, with a broad a broad black ſtreak on his upper lip, turned upwards like muſtachoes; and his countenance was grim and terrible. His neck, ſhoulders, arms, breaſt, and waiſt, were like thoſe of a man; but his hands, if he had any, were under water. He ſeemed to ſtand with his eyes fixed for ſome time on Mr. Glover, and then plunged down, riſing again ſoon after at a ſomewhat farther diſtance. He then turned his head again towards our author, and ſinking a little under water, he ſwam ſo near the ſurface, that Mr. Glover could obſerve him throw out his arms, and gather them in, as a man does in ſwimming. At laſt, he plunged his head downwards, by which means, his tail appeared above water, which exactly reſembled that of a fiſh, with a broad fin at the end of it.

This creature ſeems to be the Mermaid, or Merman, ſuppoſed to be half human and half a fiſh, the reality of which, many perſons have doubted; but their exiſtence is too well atteſted to be denied *.

We have long ago deſcribed the Whales that are found in the ſeas of Greenland, and the methods of taking them †; but there are ſeveral curious particulars relating to thoſe found on the coaſt of New-England, which Mr. Dudley has

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[*] See Vol. VIII. p. 58. & *ſeq.*

[†] See Vol. VIII. p. 140. & *ſeq.*

has obliged us with, and which ought by no means to be omitted. There are ſeveral ſorts of Whales on this coaſt, of which the moſt remarkable are the true Whale, or that which yields the Whalebone, and another which furniſhes us with the Sperma-Ceti. The Whalebone Whale is ſixty or ſeventy feet long, for theſe are not ſo large as thoſe of Greenland, and very bulky, having no ſcales, but a ſoft ſmooth ſkin, and no fins, except one on each ſide, from ſix to eight feet in length, which they are not obſerved to uſe, unleſs in turning themſelves, and while they are young, and are carried by their dam on the flukes of their tails; for then with thoſe fins, they claſp themſelves round about her, otherwiſe they would be in danger of falling off. This fiſh, when firſt brought forth, is about twenty feet long, and of little value, but then the dam is exceeding fat. At a year old, when they are called Short-heads, they are very fat, ſo as to yield about fifty barrels of oil; but by that time the dam is very poor, and will not yield above thirty barrels, though of a large ſize. When two years old, they are called Stunts, being ſtunted after weaning, and then generally yield from twenty-four to twenty eight barrels. After this, they are called Scull-fiſh, their age not being known, but only gueſſed at, by the length of the bone in their mouths. This grows on each ſide of the upper jaw, and is ſometimes ſix or ſeven feet in length. A good large Whale has yielded a thouſand weight of bone, a hundred and thirty barrels of oil, and near twenty out of the tongue alone.

The Whale producing Sperma Ceti, or Parmaſitty, as it is commonly called, is much of the ſame dimenſions with the former, but is of a greyiſh colour, whereas the others are black. He has a bunch on his back, as big as a man's head, and is diſtinguiſhed from the former kind of Whale, by having no Whale-bone in his mouth, inſtead of which, there are rows of fine white teeth in each jaw, five or ſix inches long. Our author ſent the Royal Society one of theſe teeth, taken from a Whale forty-nine feet long, and whoſe head yielded twelve barrels of Sperma-Ceti oil. Theſe are more gentle than the other ſpecies of Whales, and ſeldom fight with their tails, but, when ſtruck, uſually turn upon their backs, and fight with their mouths. The oil made of the body of this fiſh, is much clearer and ſweeter than that of other Whales.

The Sperma-Ceti oil, as our author calls it, which makes this fiſh ſo valuable, lies in a large trunk, four or five feet deep, and ten or twelve feet long, near the whole depth, breadth, and length of the head, in the place of the brains, and ſeems to be the ſame, it being diſpoſed in ſeveral membranous cells, and covered with a thick griſly ſubſtance below the ſkin, through which they dig a hole, and take out the clear oil. It is found, indeed in other parts of the fiſh, but not in ſo large quantities, nor ſo good as in the head, where it is thoroughly prepared by nature; and it is affirmed, that this trunk, or cavity, will yield from ten to twenty barrels, and the whole fiſh from twenty to fifty barrels of the common oil.

The ancients were great ſtrangers to the origin of the Sperma-Ceti, inſomuch that Schroder ſeems to doubt whether to reckon it an animal or mineral ſubſtance. And indeed the method of preparing it at preſent, is a ſecret in the hands of a few perſons, according to Pomet, who deſcribes the proceſs to be as follows. The oil, or brain, being taken out of the animal, is melted over a gentle fire, and put into molds, like thoſe wherein ſugar-loaves are formed. When cold and drained, it is melted over again; and in this manner they proceed till it be well purified, and become very white. Then with a knife, made for that purpoſe, it is cut into ſcales or flakes, ſuch as we have it from the druggiſts. Now Pomet may poſſibly be right, as to the proceſs generally uſed, but Dr. James ſays, he has ſeen Sperma-Ceti which has undergone no treatment at all, except being put into paper bags, ſo that the oil that adheres to it, might be abſorbed.

The true Sperma-Ceti is very white, and in very ſmall flakes, which by rubbing upon the hand, diſſolve into a ſort of oil, and do not adhere to the palate, when chewed, as the common ſort will, which is probably adulterated

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with wax, or ſome other ſubſtance. In many caſes, Sperma-Ceti is a noble medicine, but principally uſed in bruiſes, inward hurts, and after delivery. It is an excellent balſamic in diſorders of the breaſt; and in coughs, ſharp rheums, &c. it is very ſafe, pleaſant, and effectual; as alſo in pleuriſies and inward impoſthumations. Outwardly uſed, it is emollient and healing; but its greateſt uſe this way is in the ſmall-pox, melted with the oil of almonds. With this, the puſtules are juſt kept moiſt, when they begin to harden; and it wonderfully prevents thoſe ſcars they are apt to leave behind them. It is ſometimes alſo uſed as a coſmetic by the ladies, both in paints and waſhes; and candles are likewiſe made of it, which are ſuperior to the fineſt wax-candles in colour and luſtre.

The people of New-England, ſays Mr. Dudley, uſed formerly to kill the Whales near the ſhore; but now they go off to ſea, in ſloops, and whale-boats, in May, June, and July, between Cape-cod and Bermudas, where they lie by in the night, and ſail to and again in the day-time, and ſeldom miſs of them. The beſt ſeaſon for taking the Whale-bone kind is from the beginning of February to the end of May, and for the Sperma-Ceti Whale from the begining of June, to the end of Auguſt.

The boats they uſe in purſuing the Whale, are made of cedar clap-boards, and are ſo very light, that two men can eaſily carry them, though they are twenty feet long, and contain ſix men, viz. the harpooner, four rowers, and the ſteerſman. Theſe boats run very ſwiftly, and by reaſon of their lightneſs, can be readily brought on and off, and ſo kept out of danger. Sometimes the whale is killed with a ſingle ſtroke, and ſometimes will hold the whalemen in play for half a day together, and even make their eſcape after they have been lanced, and ſpouted blood, which is a ſign they have received their mortal wound. The Bone-Whales have two ſpout-holes, but the Sperma-Ceti Whales have only one.

The prodigious ſtrength of the Whale lies chiefly in his tail, of which Mr. Dudley and other authors give us variety of inſtances. A boat has been cut down from top to bottom, with the tail of a whale, as if cut with a ſaw, the boards being ſcarce ſplintered. An oar has been cut off while a man had it in his hand, without feeling the leaſt jarring. But one inſtance of the ſtrength of this animal, as related by Mr. Dudley, will be ſufficient, inſtead of many that might be added. Some years ago, one of the Fin-back Whales, a ſpecies found on the coaſt of New-England, came into a harbour near Cape-cod, and towed away a ſloop of about forty tons, out of the harbour into the ſea. It is ſuppoſed the Whale was rubbing herſelf againſt the fluke of the anchor, or accidently got the fluke into the orifice of the Uterus, and, finding herſelf caught, tore away with ſuch violence, that ſhe towed the ſhip out of the harbour, as faſt as if it had been under ſail, with a good gale of wind, to the aſtoniſhment of the people on ſhore, for there was nobody on board the veſſel. When the Whale came into deep water, ſhe plunged downwards, and had like to have carried the ſloop along with her; but the cable gave way, and ſo the ſloop was recovered and brought back into the harbour. This Whale was found dead ſome days after upon the ſhore, with the anchor ſticking in her belly.

The Whale-bone Whales are generally ſuppoſed to live upon ſome oozy matter they ſuck up from the bottom of the ſea; but an experienced fiſherman told Mr. Dudley, that he had obſerved this Whale, in ſtill weather, ſkimming on the ſurface of the water, to take in a ſort of reddiſh ſpawn, that ſometimes lies on the ſea for a mile together. The Sperma-Ceti Whale, beſides other fiſh, feeds much upon a ſmall fiſh, which has a kind of bill, and is called by the fiſhermen a Squid-fiſh. The Finback Whale, which has a larger ſwallow than the other ſpecies, lives on mackarel, herrings, and ſuch ſort of fiſh, great ſhoals of which he will run through, and with a ſhort turn, cauſe an eddy, or whirlpool, whereby the fiſh are brought into a cluſter, and the Whale will take in ſome hundreds of them at a time.

It is to be noted, that though Whales are gregarious, and are ſometimes ſeen a hundred in a company, the ſeveral kinds do not mix with one another, but keep by themſelves.

In ſpeaking of the Whales of Greenland, we obſerved, that theſe animals copulate much like quadrupeds, bring forth their young alive, and ſuckle them with their milk, and this is confirmed by Mr. Dudley's account of the New-England Whales, which are therefore termed bull, cow, and calf. When the female couples with the male, ſhe throws herſelf upon her back, ſinking her tail, and ſo the male ſlides up, and then ſhe claſps him with her fins. They bring forth but one at a time, and only every other year, and are ſuppoſed to go with young about nine or ten months. The calf or young Whale, has been found perfectly formed in the dam, when not above ſeventeen inches long, and white; but when brought forth, it is uſually twenty feet long, as already mentioned, and of a black colour. The female has two teats, ſix or eight inches long; and when ſhe ſuckles her young, ſhe turns herſelf almoſt upon her back, upon the ſurface of the water. Her milk is white, and upon opening a young ſucking whale, it has been found curdled in his bag, juſt like that of a calf. For the firſt year, they all ſuck the dam; but live, after they are weaned, in the manner above related.

The care the females take of their young is very remarkable. They not only carry them on their tails, and ſuckle them, but often riſe with them to the top of the water for the benefit of the air, and when they are chaſed they will not ſtrike with their tail; but if the young one happens to drop off, the dam turns about, and paſſing underneath, takes it on again. If their young be ever ſo much wounded, as long as they perceive any life in them, they never forſake them; and therefore care is taken, by thoſe who kill theſe fiſh, only to faſten the young one, and not to kill it, till they have firſt ſecured the dam; for if the young Whale be killed firſt, the dam grows ſo outrageous that it is almoſt impoſſible to manage her. When purſued they will keep under water for half an hour or more; but if a female have a young one on her tail, ſhe riſes oftener, that it may take breath; otherwiſe, when not diſturbed, they uſually riſe and blow about once in a quarter of an hour, ſpouting out water, and drawing in freſh air.

Mr. Dudley farther informs us of a ſort of fiſh that prey upon Whales, often killing the young ones, though they ſeldom venture upon the old ones, unleſs they are much wounded. The Whale-men of New England call theſe fiſh Whale-killers, for they go in company by dozens, and will ſet upon a young Whale, and bait him like ſo many bull-dogs, ſome laying hold of his tail, others of his head, and ſo bite and worry him, till being heated he lolls out his tongue, which ſome of them are ſure to catch at; but if they miſs their aim, they faſten on his lips, and thus torture him till they have killed him. When they have done this, they feed chiefly on his tongue and head, but leave him when he begins to putrify. Theſe Killers are from twenty to thirty feet long, and have teeth in both jaws that lock within each other. They are of ſuch vaſt ſtrength, that when ſeveral boats together have been towing a dead Whale to ſhore, one of them has faſtened his teeth in it, and dived with it in an inſtant to the bottom.

Before we diſmiſs this ſubject, it ſeems proper to add Mr. Smith's account of the Sword-Fiſh * and Thraſher, two allied enemies of the Grampus, a ſpecies of Whale frequenting the ſeas of North America. He ſays, he has often been an eye-witneſs of the battles between theſe allies and their common enemy the Grampus, who as naturally encounter each other when they meet at ſea, as the Elephant and Rhinoceros do at land. The Sword-Fiſh gets underneath the Grampus, and pricks him in the belly, till he riſes to the ſurface of the water; and then the Thraſher mounts his back, and beats him ſharply with his tail. Our author was once within leſs than a hundred yards of a fight between theſe creatures, and aſſures us they cauſed the ſpray of the ſea to fly up very violently all round them; but, to the beſt of his diſcernment, the Thraſher ſeemed

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* See a deſcription of the Sword-Fiſh in Vol. VIII. p. 146. & *ſeq.* where we have alſo taken notice of its enmity to the Whale.

to fight with a weapon about three yards long, like a monſtrous broad-ſword, iſſuing from his noſe, and not with his tail, as is commonly reported.

The mention of theſe fiſhes, which are in a perpetual ſtate of war with each other, puts us in mind of the Dolphin and Flying-Fiſh, which are common in the American ſeas, and indeed in many parts of the Atlantic Ocean. The Flying-Fiſh, according to Sir Hans Sloane, is of the herring-kind; but Mr. Smith deſcribes it as ſomewhat longer than a herring, and ſomewhat thicker and rounder in body. It has a fin on each ſide cloſe to the gills, about four inches long, being broadeſt as well as a little rounded at the extremity. When theſe fiſhes are chaſed by a Dolphin, or other fiſh of prey, they evade the purſuit by flying out of the water; and this flight they continue ſo long as their fins keep wet enough, which is perhaps for thirty or forty yards *, and uſually in a ſtrait line. They move their fins as nimbly as bees do their wings, ſo as ſcarce to be perceived; and as they are of a very bright ſhining colour, they look exactly like ſo many pieces of poliſhed ſilver darting through the air. Their ſight, Mr. Smith ſuppoſes, is

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* Mr. Moore, who ſaw abundance of theſe fiſh in his voyage to Africa, gives the ſame account as to their flying no longer than their fins are wet; but he believes ſome of them flew half a mile on a ſtretch.

not extraordinary good when they are out of the water, becauſe two or three of them fell upon the ſhip he was on board of, in which caſe they are utterly diſabled from riſing again; but why might not this proceed from their fins growing dry, and rendering them incapable of flying any farther? Our author adds, that theſe fiſhes either fly ſingly, or in flocks like birds; and far oftener, he believes, out of wantonneſs than fear.

The Dolphin, according to the ſame naturaliſt, is a very ſtrait-bodied fiſh, and not that crooked animal he is uſually repreſented by painters. His head indeed is exactly the ſame as it is drawn in pictures and on ſigns; but, being thickeſt at the gills, his body grows gradually taperer quite down to the tail, from the extremity of which to the end of the noſe is commonly about four feet. He is a fiſh of prey, as we have juſt now hinted, and ſwims very ſwiftly, inſomuch that we are told he keeps pace with the flying-fiſh, and often catches them juſt as they drop into the water, after they have taken a long flight to eſcape his jaws. In order to catch the Dolphin, Mr. Smith ſays, they faſten the feather-ends of two gooſe-quills to a hook, one on each ſide; and this being tied to a line, not much thicker than whipcord, is drawn after the ſhip's ſtern when the wind does not blow too freſh, making a ſmall rippling on the ſurface of the ſea, like a flying-fiſh juſt riſing out of the water, which deceives the Dolphin, who ſeizes the hook and feathers, and is taken *.

The colours of the Dolphin are extremely beautiful, his head being of the moſt lively azure blue, as is likewiſe his body from the back-fin to the middle of each ſide, with ſome intermixture of green, and ſtrewed with bright ſpots of gold, ſcarlet, &c. From hence quite down to his belly his ſkin is the colour of the faireſt beaten gold, but, in our author's opinion, far ſurpaſſing it in beauty, and a ſight worthy the attention of the greateſt monarch. About three minutes after he is taken out of the water, his glorious colours grow faint and fading, and then preſently return and vaniſh again as quick as thought itſelf †. In ſhort, ſays Mr. Smith, in five or ſix minutes time this gay ſurpriſing object fills a traveller's mind with more lofty notions of the Great Creator's wiſ-

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* . Mr. Moore agrees with Mr. Smith as to the ſtraitneſs of the Dolphin, and likewiſe tells us they caught ſeveral of them by making an artificial flying-fiſh, and ſkipping it to and fro very faſt on the ſurface of the water, at the ſtern of the veſſel.

† An acquaintance of Mr. Smith's, a ſurgeon in the unfortunate expedition to Carthagena, deſcribes the Dolphin as ſtreaked with green and yellow, intermixed with dark and light blues, as well as beautified with an admirable variety of purple, blue, and livid ſpots, &c. all which are very curious whilſt the fiſh is dying, but as ſoon as it is dead the fine colours are loſt in a moment.

dom and magnificence beſtowed upon the inferior part of the animal world, than ever it was capable of entertaining before. A Mackarel juſt taken out of the ſea is the moſt beautiful of Engliſh fiſhes, in our author's judgment; buta las! ſays he, its colours are infinitely ſhort of thoſe of a Dolphin.

There is a Stellar-Fiſh of a very ſtrange and ſingular form, of which Mr. Winthrop has given ſome account in the Philoſophical Tranſactions, and which highly merits the attention of the curious. This fiſh ſpreads itſelf from a pentagonal root into five branches, each of which is divided into two, and theſe ten branches are ſubdivided into twenty, theſe again into forty, and ſo the ſubdiviſion continues till the little ramifications amount to 81,920; beyond which our author could not certainly trace the expanſion, though poſſibly each of theſe ſmall threads might, if examined whilſt the fiſh was living, have been found to be farther ſubdivided. Its body reſembles an Echinus, or Egg-fiſh, the main branches a ſtar, and the diviſions of the branches the plant miſletoe.

The fiſherman who brought this fiſh to Mr. Winthrop, told him, that he never ſaw or heard of any of the ſpecies, except ſix or ſeven he himſelf had taken at ſeveral times on the coaſt of New England, when he was fiſhing for cod. When firſt taken out of the water, it gathered itſelf round like a wicker-baſket; and having faſtened upon the bait on the hook, ſurrounding it with its arms, it would not quit its hold, though drawn into the veſſel, till lying a while upon deck, it began to feel the want of its natural element, and then it voluntarily extended itſelf into a flat round form. The only uſe of all this curious ſtructure ſeems to be, to make a ſort of purſe-net for the animal to catch other fiſh, or whatever elſe is fit for its food, and as a ſtore-baſket to keep ſome of it for a future ſupply, or as a receptacle to defend the young ones of the ſame kind from fiſh of prey, if not alſo to feed on them; which appears not improbable, as ſometimes pieces of mackarel are found within the concavity, and ſometimes a ſmall fiſh of its own ſpecies. Every one of the ſmalleſt parts of the fiſh had motion when it was alive, and a tenacious ſtrength; but after it was dead and expanded, it could ſcarcely be handled without breaking, though by carefully laying it to dry, it was ſomewhat hardened. Mr. Winthrop thinks, it may be called a Baſket-Fiſh, a Net-Fiſh, or a Purſe-net-Fiſh, till a fitter Engliſh name be found to diſtinguiſh its ſpecies.

There is another kind of Star-Fiſh, which ſtretches out five long arms or claws, making five angles, and ending in ſo many points, reſembling a ſtar, as it is uſually painted. This fiſh moves in all directions indifferently, ſometimes creeping, and ſometimes ſwimming. It has ſeveral little trunks of a fleſhy ſubſtance, through which it ſucks its food out of the mud;

and towards the centre of its body it has a mouth armed with teeth. As theſe creatures do not enjoy the benefit of ſight, for diſcerning their prey in common with other animals, nature has therefore provided them with more inſtruments for feeling, ſucking, and devouring their food; for when they have not an opportunity of exerciſing their teeth, they can go to work with their trunks in the mud and among the weeds, and by that means procure a tolerable repaſt. It is not yet diſcovered how the office of digeſtion is performed in the Star-Fiſh, or how it voids its excrements, unleſs it be under a ſort of roundiſh ſtone, which is found on its back, and ſeems faſtened to it with ligaments.

The Echinus, or Sea Urchin, though not peculiar to the ſeas of America, deſerves to be mentioned. There are ſeveral ſpecies of this ſhell-fiſh, but thoſe are moſt properly called ſo which are covered with prickles, reſembing thoſe of the Land-Urchin, or Hedge-Hog *. The mouth of this fiſh is placed on its under part, touching the ground, and is armed with five teeth, which meet at their extremities in a point, that they may all work together. The ſtomach and bowels fill the inſide of the ſhell, which has ſeveral little holes in it to give free liberty to the action of thoſe ligaments that are to move the prickles, which ſerve the animal

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* A ſpecies of Sea-Urchin, otherwiſe called a Globe-Fiſh, has been already taken notice of.

for a covering and defenſive armour. The outward extremity of the prickle is ſharp-pointed, but the other end next the ſhell is hollowed like a ſocket, and receives a little tubercle to which it is jointed. Several of theſe tubercles are ſeen on moſt of thoſe ſhells that have no prickles on them; but what is moſt remarkable in ſome Sea-Urchins, is a ſort of briſtles, which they thruſt out or draw in at pleaſure. They are like ſo many ſmall tubes or reeds, and with theſe they ſuck and ſeparate thoſe juices which are their proper nouriſhment.

But of all the ſhell-fiſh which either the American or any other ſeas afford, perhaps none are more to be admired than the Nautilus, or Sailor, which Valliſneri has prettily deſcribed, and after him the ingenious author of *Spectacle de la Nature*. The turbinated ſhell of this fiſh, which is beautified with ſtrong and lively colours, may properly be called a natural boat, ſince the little animal that inhabits it, makes uſe of it in that capacity. In calm weather he mounts up in it to the ſurface of the water, unfurls a membrane to the wind, which ſerves him inſtead of a ſail, and extends two arms, with which, like oars, he rows his little bark along. When he has a mind to dive, he ſtrikes ſail, collects himſelf within his ſhell, and, filling the remaining cavity with water, ſinks to the bottom: for the fiſh, by contracting himſelf, leaves a vacant ſpace in his boat, into which the water finds admittance through a little aperture, and by its additional gravity cauſes it to ſubſide. On the other hand, when the fiſh has an inclination to aſcend to the top, it is probable he dilates himſelf, and ſo forces the water out of his boat, by which evacuation it becomes ſpecifically lighter than the water, and conſequently riſes to the ſurface. Thus the animal ſteers his courſe, without chart or compaſs, ſelf-taught in the art of navigation, and is at once both veſſel and pilot. From whatever quarter the wind blows, it is all one to our little ſailor, who is under no apprehenſion of danger, nor ever deſtitute of rudder or oars, pump or cordage, having within himſelf all the neceſſary utenſils of navigation.

The Soldier-Crab, or Hermit; is a very remarkable kind of ſhell-fiſh, deſcribed by Rondeletius, and other naturaliſts, as living in a houſe not its own, and owing its ſecurity to the labour of another, though nature has provided it with a ſhell, and given it claws to defend and ſubſiſt itſelf in an honeſt manner. It is the cuſtom, it ſeems, of this fiſh to take poſſeſſion of the firſt ſhell he finds empty, and ſometimes ſeveral of them meet naked, and contend for the ſame habitation; in which caſe he that has the ſtrongeſt pincers carries the day. Here the conqueror takes up his lodging for ſome time, till being grown too big for his houſe, he quits it, and ſeeks out another of a convenient ſize, where he ſtays till he is tired of it, or is grown too bulky, and then he removes again. This is the account that naturaliſts give of this fiſh; but the French author lately mentioned, does not think it deſerves the character of a lazy animal, that lives by the labour of others, as it is uſually repreſented; for nature, ſays he, knows no ſuch principle as idleneſs, nor ever acts without reaſon or wiſe deſign. The truth is, the body of this fiſh, called by the French the Poor Man, or the Hermit, is flabby, and covered with a thin ſhell inſufficient for its ſecurity; which obliges it to take ſhelter in ſome of thoſe empty ſhells, which are of no uſe but to ſuch a tenant. This precaution of the Hermit, adds our author, is not unlike that of the little crab, which, being ſenſible of the weakneſs of its own ſhell, begs houſe-room of the muſcle, who, having ſome to ſpare, receives his gueſt, and they live very neighbourly together.

It is ſaid the oil diſtilled from this fiſh, is an excellent remedy for the rheumatiſm.

The Cuttle-Fiſh, the Calamary, and Pourcontrel, or Polypus, ſeem to be different ſpecies of the ſame fiſh, and are found in the ſeas of Europe, as well as thoſe of America. The Cuttle-Fiſh is covered on the back with a white bony or teſtaceous ſubſtance, an inch thick in the middle, but thinner on the ſides; on the upper part hard, ſmooth, and glabrous; on the lower fungous, ſoftiſh, ſomewhat rough, and friable. It has two large black eyes encircled with red; and beſides ſeveral claws, it has two long trunks or horns, which ſerve it in ſwimming, and to let down like a line for its prey, the hook at the end of each laying hold of the ſmall fiſh on which it feeds.

The Calamary is provided with much the ſame inſtruments; and the Pourcontrel or Polypus has, beſides its eight claws, an excreſcence that riſes from its back in form of a pipe, which he inclines to the right or left to ſteer him as he ſwims along.

But what is moſt obſervable in theſe fiſhes is, that they are all provided with a bag under their throat, full of a liquor as black as ink, which either through fear or natural inſtinct they diſcharge when purſued by other fiſhes, and ſo by troubling the water have an opportunity of making their eſcape.

The bone, the black liquor, and the eggs of the Cuttle-Fiſh, are of uſe in medicine. The bone dries and abſterges, cures ſpots and freckles, is good for the eyes, removes ſwellings in the gums, gives relief in the aſthma, ſtops a gonorrhœa, expels gravel, and promotes urine. The black humour is ſaid to looſen the belly, and the eggs abſterge the kidneys and ureters, and provoke urine and the menſes.

Having mentioned a Polypus, which word ſignifies *Many Feet*, it leads us to take notice of a very curious diſcovery made ſome years ago by M. Trembley, at the Hague; concerning which M. Reaumur read a memorial before the Royal Academy of Sciences at Paris, in November 1742. The ſubſtance of it was, That an aquatic inſect called a Polypus, was found to have this peculiarity in it, that when cut into ſeveral parts, each of thoſe parts produces of itſelf, in the ſpace of twenty-four hours, what it wants to compleat the whole; ſo that the part belonging to the head, will produce a tail, and on the contrary. Nay, ſome of thoſe inſects have been cut tranſverſly into forty parts, which each produced what was wanting in it to make a perfect inſect; ſo that from one Polypus proceeded forty. If they be cut down the middle from head to tail, each half will produce another.

On this occaſion M. Reaumur made ſeveral learned and judicious obſervations, particularly that, as it is an axiom that nature is not ſingular in her productions, there muſt be other inſects endued with the like wonderful property: and he reports, that by experiments he has already diſcovered the ſame in certain earthworms, but that nature operates in them much more ſlowly *.

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* Mr. Smith has inſerted this account in one of his letters, and mentions a property of the lizard, which had fallen under his own obſervation, viz. that if one of them had its tail bit or cut off, it would ſoon grow again to its uſual length.

The fiſhes we have been deſcribing, are ſuch as are perpetually travelling from place to place, but there are ſeveral others of a quite contrary nature, which remain all their lives attached to one and the ſame ſituation; as the *Auris Marina*, or Sea-Ear, and the Limpets of every ſpecies. It is wonderful indeed how theſe and many other ſhell-fiſh ſubſiſt without ſeeking out for proviſion, unleſs we ſuppoſe their prey comes to them of its own accord: and perhaps this is the caſe with ſome of them, particularly the Sea-Ear, where the little holes along the brims of the ſhell ſeem deſigned as ſo many traps to catch the ſmall worms that are found at the bottom of the ſea in great abundance.

Amongſt this kind of animals, the Sea-Muſhroom is one of the moſt remarkable, which never quits the place where it has once fixed its abode. Theſe little creatures are found ſticking on the ſides of rocks, where they look like muſhrooms when they are ſhut and collected within themſelves, and like the Anemone, when they open and diſplay all their trunks. There is no forcing them to open againſt their will, but upon preſſing them they ſometimes eject young ones of different ſizes, which ſeems to prove that they are viviparous, and both male and female. You may looſen the Sea-muſhroom from its hold, carry it away, and keep it in water, where it will faſten itſelf again to the firſt convenient place it finds. When it has a mind to open, it raiſes itſelf, and thruſts out two white pellicles like bladders, round which appear a vaſt variety of points or trunks, of different ſizes and colours, which has made ſome naturaliſts call it the Sea Anemone. This opening, not unlike the blowing of a flower, has inclined others to look upon it as a real plant, or elſe as partaking both of the animal and vegetable nature: but as it is certain the little points or ſtuds juſt mentioned are not leaves, but a ſort of ſnouts or trunks deſigned for the ſucking in of nouriſhment, like the fine reeds or prickles of the Sea-Urchin or Star-Fiſh, we cannot deny it a place in the animal kingdom; eſpecially after ſuch a circumſtances at that of three or four young ones iſſuing from the parent upon ſqueezing it, which is confirmed by ſufficient teſtimony.

This ſhort account of ſome of the inhabitants of the ocean may ſerve as a ſpecimen of that inexpreſſible wiſdom which appears in the works of the creation, and of the various methods that God has provided for the ſupport of different animals. And we cannot but admire, with the ingenious French writer, whom we have chiefly followed on this ſubject, the kindneſs of providence, in that profuſion of riches which the ſea pours in upon us, every time it riſes and floods our coaſts, viz. thoſe vaſt quantities of lobſters, oyſters, and all ſorts of ſhell-fiſh it brings up along with it; from whence, after having fattened them either with its own ſubſtance, or ſuch nutritive particles of earth and air as are contained in it, it retires by a gentle decreaſe, giving man acceſs to theſe dainties, and inviting him to come and gather its favours, which it has ſo liberally ſcattered upon the ſhore, or left upon the rocks.

As the ſame author obſerves, we have juſt reaſon to be charmed with the luſtre and beauty that appears in the coverings of the teſtaceous animals, though apparently they are nothing but a diſcharge of an excrementitious matter from the body that produces them. How delightful is that mixture of red, blue, and green colours, that ſtain the ſilver ground of the ſhell of the naker or mother of pearl! But moſt amazing of all is that wiſe deſign and contrivance which appears not only in the ſhell of this fiſh, but even in that of the common oyſter or muſcle. The greateſt part of theſe animals are viviparous, and bring forth their young with the ſhell about them, which covering nature has provided them with for their ſecurity and defence; and has alſo made them to abound with a ſlime or viſcous juice, which they emit to the extremities of their ſhells, where it hardens into a ſubſtance of the ſame nature, and by that means enlarges their habitations proportionably to the growth of their bodies *. Hence come thoſe curve lines that we

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* Naturaliſts have been generally miſtaken as to the manner of the formation of ſhells. The animal

we diſcern in the ſhells of divers fiſhes, one without another, which perhaps ſhew the number

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mal and its ſhell have been always ſuppoſed to proceed from the ſame egg; but M. Reaumur has ſhewn the ſuppoſition to be falſe, having found by certain experiments, that the ſhells of garden-ſnails are formed of a matter which perſpires from their bodies, and hardens and condenſes in the air. All animals are known to perſpire, and are encompaſſed with a ſort of cloud or atmoſphere, which exhales from them, and probably aſſumes nearly their external figure. Snails have nothing peculiar in this reſpect, unleſs that the atmoſphere of their perſpiration hardens about them, and forms a viſible covering, whereof the body is the mould or model, whereas that of other animals is evaporated and loſt in the air. This difference ariſes from the difference of the matter perſpired; that of teſtaceous animals, particularly the ſnails, being viſcous and ſtony. On this principle, though the ſhell ſerves the animal as an univerſal bone, yet it does not grow like a bone, nor like any of the other parts, by vegetation, that is, by a juice circulating within itſelf; but by an external addition of parts laid one over another.

To conſider the thing a little more particularly: It is to be remembered, that the ſnail's head is always at the aperture of the ſhell, and its tail in the tip or point of the ſhell; and that its body is naturally turned into a ſpiral form, the different circumvolutions whereof are in different planes. Suppoſe then the ſnail juſt hatched; as the matter it perſpires, petrifies round it, there muſt be formed a little cover proportioned to the ſize of its body; and as the body is yet too ſmall to make a circumvolution of a ſpiral, at leaſt a whole one, this cover

will

ber of their years, or at leaſt the different ſtages of their growth. There is alſo a ſurpriſing deal of workmanſhip ſhewn in the formation of that hinge which joins the upper and lower ſhells of a muſcle, and in the curious movements of thoſe little muſcular fibres and ligaments with which it is faſtened. When the animal has a mind to ſhut itſelf cloſe up within its vaulted habitation, it diſcharges a certain liquor into thoſe muſcles, which cauſes them to dilate and ſwell, and conſequently ſhortens their length, ſo that both the ſhells are thereby brought cloſer together. On the other hand, when it is diſpoſed to open its doors, at the return of a new tide, or the fall of ſome agreeable ſhower, it withdraws that liquor from them, whereby they are relaxed and lengthened. But theſe, our author acknowledges, are only probable conjectures, it being impoſſible for us to determine any thing certain, of what is concealed from our obſervation at the bottom of the ſea.

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will only be the center, or at moſt the beginning of a little ſpiral curve. Now as the animal grows, if it ceaſed to perſpire, it is evident all that is added to its body would remain naked; but as the perſpiration continues, the cover increaſes in proportion to its growth. Thus an entire circumvolution of a ſpiral is formed; and ſo a ſecond and a third; and ſtill every new ſpire is bigger than the laſt, in regard the animal grows in thickneſs, at the ſame time it grows in length. When it ceaſes to grow, it does not ceaſe to perſpire; and accordingly the ſhell increaſes in thickneſs, though not in length.

VEGETABLES.

AMONG the vegetable productions of South America, one of the moſt remarkable is the Aloe, which has very thick green leaves, broad towards the root, and tapering to a point, ſtiff and prickly, and yielding a kind of cotton, of which laces may be made. From the middle of the leaves ariſes a ſtem, which bears the flowers and fruit. The flowers grow at the end of branches, that ſhoot out oppoſite to each other, and each conſiſts but of one leaf, cut into ſix ſegments, at the top like a hyacinth. The fruit is oblong and cylindrical, divided into three cells, in which are contained flat, and for the moſt part ſemicircular ſeeds. Moſt of the African ſorts produce flowers with us annually, when grown to a ſufficient ſize; but the American Aloe, which moſt commonly produces its flower-ſtem immediately from the center of the plant, ſeldom flowers till it be of a great age, and this but once during the life of the plant; ſo that to have one flower in England, is reckoned a curioſity, and generally draws a vaſt number of ſpectators. It is obſerved, that when the flower-ſtem, which is uſually large, and grows to a great height, begins to ſhoot from the middle of the plant, it draws all the nouriſhment from the leaves; ſo that, as the ſtem advances, the leaves decay; and when the flowers are full blown, ſcarce any of the leaves remain alive: but whenever this happens, the old root ſends forth numerous offsets; and it is only at this time that ſome of theſe Aloes can be propagated.

Dr. Merret tells us, that he had an American Aloe, conſiſting of eleven leaves, which was tied about with a red dry cloth, and hung up, without oil, in his kitchen. In a whole year he obſerved it loſt two ounces, three drachms, and twenty-four grains of its weight. The next year being drier and hotter, it loſt upwards of three ounces; and more than double in the ſix colder than in the ſix hotter months. He kept it about five years, and it waſted much in the ſame proportion, till at laſt, hanging it in a cold garret, it died. The Doctor took notice, that every year two of the greater leaves firſt changed colour and withered, and every ſpring there ſucceeded two freſh and green ones, of the ſize of the preceding; from whence he thinks it may be probably inferred, that there is a circulation of the nutritious juice in this plant; for how is it poſſible that the roots, continuing firm and ſolid as at firſt, ſhould ſupply ſo much nouriſhment, unleſs the ſaid juice returned from the old decayed leaves into the root, and ſo produced new ones?

It is proper to obſerve, that of all the ſpecies of Aloes, there are not above twelve that yield the inſpiſſated juice of the ſame name, much uſed as a purgative remedy. This juice is obtained by cutting the leaves of the plant,

from

from whence it oozes either ſpontaneouſly or by preſſing, and is expoſed to the ſun till it becomes of a proper conſiſtence. There are three ſorts of Aloes, the Succotrine, which is the pureſt; the Hepatic, which is ſomewhat coarſer and harder; and the Caballine or Horſe-Aloes, which is the moſt impure, blackeſt, and ſtrongeſt of all, and is of little uſe amongſt us but for horſes and cattle. Whether theſe are all procured from the ſame plant, or from different ſpecies of it, authors are not rightly agreed.

The beſt Aloes is that which is pinguious, of a dark colour, in ſome meaſure friable, its ſmell reſembling that of myrrh, and which, when pounded, yields a powder of a golden colour. In conſequence of its bitterneſs, it is called the Gall of Nature; and this makes it ſo nauſeous, that it is rarely uſed in liquid forms, but made up into pills. It conſiſts of two ſubſtances, one reſinous, which may be extracted by ſpirit of wine; the other of a gummy nature, which may be diſſolved in water. Its balſamic quality is ſo great, that animalcules may be preſerved in it for ages; and upon this account it is uſed in enbalming human bodies. Its cathartic virtue is beſt employed in watry, cold, mucous conſtitutions, and ſuch as are diſpoſed to the generation of acids. Againſt worms it is uſed both internally and externally, and it is reckoned efficacious in promoting the menſes. The ſuccotrine Aloes is preferable for internal uſes, and the hepatic for external.

Amongſt the vegetables of America, one of the firſt we ought to mention, is the celebrated plant we call Tobacco *, which is now grown into ſuch general uſe in Europe, and makes one of the moſt profitable branches of the Engliſh commerce. The Virginian Tobacco, eſpecially the ſweet-ſcented, which grows on York River, is reckoned the beſt in the world, and is generally vended in England for home conſumption; but the hotter ſorts, either of Virginia or Maryland, turn to as good account, being demanded in Holland, Denmark, Sweden, and Germany. Mr. Clayton ſays, that the ſweet-ſcented Tobacco, which grows on ſandy land, is beſt for ſmoaking whilſt new, or only two or three years old; but if the ſtiff

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* This plant has different names among the Indians in different parts of America, as Petun, Picelt, Yoli, &c. The French, at its firſt introduction amongſt them, gave it various names, as Nicotiana, or the Ambaſſador's Herb, from John Nicot, then Ambaſſador of Francis the Second, in Portugal, who brought ſome of it with him from Liſbon, and preſented it to a Grand Prior of the houſe of Lorrain, and to Queen Catharine de Medicis, whence it was alſo called Queen's Herb, and Grand Prior's Herb. They alſo gave it other names, which are now all reduced to the original name Tobacco, given it by Hernandez de Toledo, who firſt ſent it into Spain and Portugal, about the year 1560.

land Tobacco, which is generally of a good ſubſtance, be kept five or ſix years, it will much exceed the former.

The manner of planting and ordering Tobacco is this: The ſeed is firſt ſown in beds of fine mould, and when the plants are riſen to a convenient height, they are tranſplanted to little hills three or four feet from each other, ſomewhat in the manner of hop-grounds. This is done about the beginning of May, from which time the hills are kept continually weeded, and when the plants have put forth ſuch a number of leaves as they think the ſoil will nouriſh to a ſufficient ſubſtance and largeneſs, they take off the top of each plant, which after that grows no higher. If the ground be rich, they let a plant put forth twelve or fifteen leaves before they top it; if poor, not above nine or ten; and ſo in proportion to the goodneſs of the ſoil. The ſuckers which the plant puts forth between the leaves are taken off once a week till it comes to perfection, which it does in Auguſt. Then in dry weather, when there is a gentle breeze of wind, they cut down what is ripe, letting it lie three or four hours on the ground; after which they carry it on their ſhoulders to the Tobacco houſes, or ſheds, where a peg is driven into the ſtalk of each plant; and by theſe pegs the plants are hung up to dry, ſo near each other that they juſt touch. Thus they let them hang for five or ſix weeks, till ſuch time as the ſtem in the middle of the leaf will break in bending it; and when the air has ſo moiſtened the leaf that it may be handled without breaking, they ſtrip them off the ſtalk, tie them in little bundles, and pack them up in hogſheads, for exportation. The bundles deſigned for Twiſt-Tobacco, are ſteeped in ſea-water, or, for want of that, in common water, then twiſted in the manner of ropes, and the twiſt formed into rolls by winding them with a kind of mill round a ſtick; and in this condition they are imported into Europe.

Mr. Clayton informs us, that ſometimes they are forced to plant their hills twice or thrice over, on account of an earth-worm which eats the root; and when the plants are well grown they often ſuffer damage by a worm called a horn-worm, which is bred upon the leaves, and, if not carefully taken off, will ſpoil a whole crop. The plants, when young, are alſo ſometimes deſtroyed by a ſmall fly, which breeds upon them in gleamy weather; and they are likewiſe ſubject to a diſtemper they call firing, which happens when very hot weather ſuddenly follows a wet and cold ſeaſon, at which time the leaves of the young plants turn brown, and are dried to powder. Another fault is when the leaves do not ſpread and grow large, but rather ſpire upwards and grow tall; and ſuch plants as theſe they call Frenchmen.

Tobacco is very much uſed amongſt us, either by ſmoaking it in a pipe, by way of ſnuff, or by chewing it in the mouth; and it is ſometimes put up the noſe in little pellets, where it is found to produce good effects, to draw a deal of water or pituita, to unload the head, reſolve catarrhs, and cauſe a free reſpiration; but this way of taking Tobacco is ſaid to weaken the ſight. When taken in great quantities in the way of ſnuff, it is found to prejudice the ſmelling, and greatly diminiſhes the appetite. That taken in the way of ſmoke dries and damages the brain; inſomuch that we read of a perſon who through exceſs of ſmoaking had dried his brain to that degree, that after his death there was nothing found in his ſkull but a little black lump, conſiſting of mere membranes. Indeed ſmoaking and chewing of Tobacco have been eſteemed of ſervice where the glands of the fauces have abounded with lymph, or where the conſtitution in general has been too much loaded with ſerum; and the ſame has been ſaid to relieve ſome aſthmatic patients, which is not unlikely: but this can be no reaſon for its habitual uſe, eſpecially in thoſe who have no occaſion for it; for to ſuch, as an eminent phyſician apprehends, it does a great deal of prejudice, by drawing off the ſaliva, which nature providently prepares to dilute, and in ſome meaſure to diſſolve the aliments taken in the ſtomach. Beſides, it excites a perpetual thirſt, and thereby tempts the perſon who ſmoaks or chews to drink more than is ſufficient for any good purpoſes in the conſtitution. Add to this, that many people have been brought into dropſies and conſumptions by too profuſe diſcharges of the ſaliva, excited by ſmoaking or chewing Tobacco. Upon the whole, it muſt needs be extremely prejudicial, unleſs when it can be made ſubſervient to any good medicinal purpoſes; and even then, like opium, it ſhould be uſed when required only, and left off immediately when the neceſſity for it ceaſes. The ſame may be ſaid of Tobacco, conſidered as a ſternutatory, which may anſwer ſome purpoſes as a medicine, but is ſure to be prejudicial when rendered habitual by way of amuſement *.

This plant is narcotic, emetic, and cathartic to ſuch a degree, that the internal uſe of it is ſeldom or never to be allowed, though a water diſtilled from the green leaves is much recommended for diſſolving ſtones in the urinary paſſages. Some people uſe an infuſion of Tobacco as an emetic; but it is a dangerous and unjuſtifiable practice, as it is too apt to produce violent vomitings, ſickneſs, and ſtupidity. A ſtrong decoction of the ſtalks, with ſharp-pointed dock and alum, is reckoned of good ſervice, uſed externally, in cutaneous diſtempers, eſpecially the itch, for which purpoſe ſome boil them in urine; and the ſame is ſaid to be an infallible remedy for the mange in dogs. The juice of Tobacco is recommended

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* Some Princes, as Amurath the Fourth, Emperor of the Turks, an Emperor of Perſia, and a Great Duke of Muſcovy, have prohibited the uſe of Tobacco in their dominions; and our King James the Firſt, was ſo ſenſible of its pernicious effects, as to write a treatiſe expreſsly againſt it, entitled, *A Counterblaſt to Tobacco.*

to preſerve the teeth and gums, and to cure the tooth-ach; for which laſt purpoſe the chymical oil of Tobacco, dropped on lint, and applied to the tooth, has been of ſervice; but people ſhould be very cautious how they uſe this oil, which is ſo ſtrong, that a drop or two of it put on the tongue of a cat, produces violent convulſions, and death itſelf in the ſpace of a minute. Some writers extol the uſe of Tobacco in times of peſtilence, aſſerting that when the plague raged in London, the houſes of tobacconiſts eſcaped the infection. But the greateſt uſe of Tobacco in medicine is in clyſters; for even the ſmoke of it conveyed into the inteſtines, ſtimulate ſo ſtrongly, as to procure ſtools when every other method of doing it has failed.

Another very remarkable vegetable of North America, is the Poiſon-Wood-Tree, which grows in New England, in ſwamps or low wet grounds, and is deſcribed by Mr. Dudley as ſomewhat like a ſmall aſh, but much more like a ſumach, which it exactly reſembles in its twigs, leaves, and ſhape, ſo that ſome call it the Swamp-Sumach; and it likewiſe bears a dry berry. It never grows bigger than about the thickneſs of a man's leg, and as tall as an alder; but it ſpreads much, and ſeveral grow together, eſpecially about the roots of one that has been cut down. The inſide of the wood is yellow, and very full of juice, which is as glutinous as honey or turpentine, and ſtinks as bad as carrion; and the wood itſelf has a very ſtrong diſagreeable ſmell. As to its poiſonous quality, our author obſerves, that it poiſons two ways, either by the touch or by the ſmell; the ſcent of it, when cut down in the woods, or burning in the fire, being poiſonous to a great degree. One of Mr. Dudley's neighbours was blind for above a week with only handling it; and a gentleman ſitting by his fire-ſide in the winter, was ſwelled for ſeveral days with the ſmoke of ſome of this wood that happened to be in the fire. But what is ſtrange, it has this effect only on ſome particular perſons and conſtitutions, for Mr. Dudley has ſeen his own brother not only handle it, but chew it without any harm at all; and ſo by the ſame fire one ſhall be poiſoned, and another not in the leaſt affected. However, this ſort of poiſon is never mortal, but will go off in a few days of itſelf; though generally the patient applies plantain-water, or ſallet-oil and cream. A few hours after a perſon is poiſoned, he feels an itching pain that provokes a ſcratching, which is followed by an inflammation and ſwelling.

The wood is as cold as ice, as Mr. Dudley's neighbour that was poiſoned told him, ſo that he plainly perceived it differed from the other wood he was throwing up into his cart; and he aſſured him he could diſtinguiſh it blindfold, or in the dark, from any other wood in the world by its coldneſs.

As we are now ſpeaking of New England, it ſeems proper to add ſome other obſervations of Mr. Dudley, on the vegetables of that country, and particularly on the Indian corn or Maize, which is the moſt prolific grain they have, commonly producing twelve hundred grains from one, and often two thouſand*.

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* The fecundity of divers plants is very ſurpriſing. We have an account in the Philoſophical Tranſactions of a ſingle plant of barley, that by ſteeping and watering it with ſalt-petre diſſolved in water, produced two hundred and forty-nine ſtalks, and eighteen thouſand grains. In this caſe indeed there was art and force made uſe of; but we have remarkable inſtances of this kind, effected by unaſſiſted nature, particularly that of a pompion-ſeed, atteſted by Mr. Edwards of Windſor. This ſeed, in the year 1699, was accidentally dropped in a ſmall paſture, where cattle had been foddered for ſome time; and taking root of itſelf, without any manner of care, the vine ran along over ſeveral fences, and ſpread over a large piece of ground far and wide, continuing its progreſs till it was killed by the froſt. The ſeed produced no more than one ſtalk, but it was a very large one, being eight inches round; and from this ſingle vine they gathered two hundred and fifty pompions, one with another as big as half a peck, beſides a conſiderable number of ſmall ones, not ripe, which they left upon the vine. Add to this what M. Dodart obſerves, who has an expreſs diſcourſe on the fecundity of plants, in the Memoirs of the Academy of Sciences, wherein ſhe ſhews, that an elm, at a moderate computation, yields one year with another 329,000 grains or ſeeds; each of which, if properly lodged, would grow up to a tree. Now an elm ordinarily lives a hundred years, and conſequently,

But the faireſt computation, ſays our author, is this: Six quarts of this grain will plant an acre of ground, and it is not unuſual for an acre of good ground to produce fifty buſhels of corn.

Another thing very remarkable in the Indian corn is its variety of colours, as blue, white, black, red, yellow, greeniſh, ſpeckled, ſtriped, &c. and if any one ſort be planted ſeparately, ſo that no other ſort be near it, it will retain its own colour; but if in the ſame field you plant the blue corn in one row of hills, as they are called, and the white or yellow in the next row, they will mix and interchange colours; that is, ſome of the ears in the blue corn rows ſhall be white or yellow, and ſome in the white or yellow rows ſhall be blue. The little hills of Indian corn are generally four or five feet aſunder, and continued regularly in ſtrait lines, ſomething in the manner of a hop-ground; and yet this mixing and interchanging of colours has been obſerved when the rows of hills have been ſeveral yards diſtant from each other: nay, Mr. Dudley was aſſured that this interchange has been made even at the diſtance of

ſequently, in the courſe of its life, produces near thirty-three millions of grains, all coming originally from one ſingle ſeed.

But inſtances of this fecundity need not be multiplied here, being obvious to every one's obſervation, who has the leaſt regard to the wonders of nature.

four or five rods, and particularly in a place where there was a broad ditch of water between the two different ſorts of grain; ſo that the mixture cannot be owing to the roots and ſmall fibres reaching to and communicating with each other, as ſome have imagined. Our author, therefore, is of opinion, that the ſtamina or principles of this ſurpriſing copulation or commixture of colours are conveyed by the wind, and that the ſeaſon of it is when the corn is earing, and while the milk is in the grain; for at that time it is in a ſort of eſtuation, and emits a ſtrong ſcent. What confirms this hypotheſis, of the air being the medium of this communication of colours in the corn, is an obſervation of one of Mr. Dudley's neighbours, viz. that a cloſe high fence of boards between two fields of corn, that were of a different colour, entirely prevented any mixture or alteration.

Mr. Winthorp deſcribes the ear of the Indian corn as generally about a ſpan long, conſiſting of ſeveral rows of grain, commonly eight or more, according to the goodneſs of the ſoil, and each row containing above thirty grains. The white and yellow ſorts are the moſt common; but he obſerves, that not only in the ſame field, but even in the ſame ear, the grains are ſometimes of different colours. The ear is cloathed and armed with ſeveral ſtrong thick huſks, which not only defend it from unſeaſonable rains, and from the night-colds, it being the latter end of September before it is fully ripe in ſome parts, but alſo from crows, ſtarlings, and other birds. Its ſtalk grows to the height of ſix or eight feet, more or leſs, according to the condition of the ſoil, or the kind of the ſeed. The Maize of Virginia grows taller than that of New England, and there is a ſort uſed by the northern Indians farther up the country, which is much ſhorter. It is always jointed like a cane, is full of a ſweet juice, and at every joint grow long leaves almoſt like flags, and at top a bunch of flowers like the bloſſom of rye. The manner of planting this Indian wheat is in rows at equal diſtances every way, as has been already mentioned; and when the corn is grown up to a proper height, they cut up the weeds and looſen the earth about it with a broad hoe, repeating this labour as often as the growth of the weeds makes it neceſſary. When the ſtalk begins to grow high, they draw a little earth about it; and upon the putting forth of the ear, they ſcrape up as much as will make a little hill like a hop-hill; after which they give themſelves no farther trouble about it till harveſt.

This culture is all done with the hoe, but the Engliſh have now taken a better way of planting. With the plough they make ſingle furrows through the whole field at the diſtance of ſix feet, or as they ſee convenient; and to theſe they make croſs furrows at the ſame diſtance. Where theſe furrows interſect each other they throw in the corn, and cover it

either

either with the hoe, or by running another furrow with the plough. When the weeds begin to over-top the corn, they plough the reſt of the field between the planted furrows, and ſo turn in the weeds. This is repeated when they begin to hill the corn with the hoe, and thus the ground is looſened, and the roots have liberty to ſpread.

The huſks that grow about the ear of this corn, the Indian women ſlit into narrow ſlips, and weave them curiouſly into baſkets of ſeveral faſhions.

Speaking of ſome of the vegetables in New England, Mr. Dudley mentions a Plantanus or Button-Wood-Tree, as it is there called, which was nine yards round, and held that bigneſs a great way up; and this tree, when cut down, made twenty-two cord of wood, as our author was informed. This tree he often propagated by cutting of ſticks five or ſix feet long, and ſetting them a foot deep in the ground in the ſpring of the year, when the ſeaſon is wet; and this and the Locuſt-Tree, or American Manna, as Mr. Dudley thinks it may be called, are remarkable for their quick and eaſy growth. A ſeed of the latter, blown off into our author's garden, took root of itſelf, and in leſs than two years was got above ſix feet high.

With regard to their fruit-trees, Mr. Dudley obſerves, that their Peach-trees are all ſtandards, and he himſelf has had in his own garden ſeven or eight hundred fine Peaches of the Rareripes growing at the ſame time upon one tree; to which we add, that in ſeveral of the plantations they have ſuch vaſt quantities of Peaches, that they beat them off the trees, and give them to their hogs. Theſe trees raiſed from the ſtone will bear in three years; and our author had one in his garden of twelve years growth, that meaſured two feet one inch round, a yard from the ground, and two years before bore near two buſhels of fine Peaches.

The people of New England, ſays Mr. Dudley, have of late years run ſo much upon orchards, that in a village near Boſton, conſiſting of about forty families, they made in the year 1721, near three thouſand barrels of cyder; and in another town of two hundred families, in the ſame year, they made near ten thouſand ~~barrels.~~ Some of their apple-trees will yield ſix, ſome ſeven barrels of cyder, at the rate of eight or nine buſhels of apples to the barrel; but this is not very common. Mr. Dudley has ſeen a fine Pearmain tree, which, at a foot from the ground, meaſured ten feet four inches round, and in one year bore thirty-eight buſhels of excellent fruit. The largeſt apple-tree he found in that country was ten feet and a half in compaſs.

The Orange pear-tree, according to our author, grows the largeſt, and yields the faireſt fruit. He obſerved one of theſe trees near forty feet high, which was ſix feet ſix inches in circumference, a yard from the ground, and bore thirty buſhels at a time; and he himſelf had a pear-tree that was five feet ſix inches round. One of his neighbours had a Bergamot pear-tree, brought from England in a box, about the year 1643, which was ſix feet in compaſs, and in one year bore twenty-two buſhels of fine pears.

The ſame gentleman gives us a remarkable inſtance of an apple-tree in an orchard, which bore a conſiderable quantity of apples, eſpecially every other year, and yet never had a bloſſom. For three years he went in the proper ſeaſon and obſerved it; and when all the reſt of the orchard was in bloom, he could not ſee one ſingle bloſſom upon this tree. Not contented with once going, he went again and again, till he found the young apples perfectly formed. One year he took notice of it early, not knowing but it might blow ſooner than the other trees; but he found no bloſſoms: and the owner, with ſeveral of his neighbours, aſſured Mr. Dudley, they had known the tree upwards of forty years, and that it never had any bloſſom. Our author opened ſeveral of the apples, and found very few ſeeds in them, ſome of which were lodged ſingle in the ſide of the apple.

Mr. Glover, who has given ſome account of Virginia, in the Philoſophical Tranſactions, obſerves that fruit-trees are very numerous in that country; inſomuch that there are few planters without their orchards, ſome containing twelve hundred trees and upwards, bearing all ſorts of Engliſh apples, as Pearmains, Pippins, Ruſſetins, Marigolds, King's Apples, Badchelors, &c. of which they make a great deal of cyder. They have alſo infinite quantities of peaches, with which they feed their ſwine, as we have hinted above, and quinces in abundance, both larger and fairer than the Engliſh, and not ſo harſh in taſte. They make a drink of the juice of quinces; and they have alſo apricots, and ſome ſorts of Engliſh plumbs, but theſe do not ripen ſo kindly as they do in England. The few pears they have are large and pleaſant, and figs grow there as good as in Spain; but it is remarkable that neither oranges nor lemons will thrive there, though they will in more northerly countries. Cherries are as plentiful all over Virginia as they are in Kent, and the trees are generally larger than in England, and bear more plentifully without digging about them, or pruning. The woods abound in vines, which twine about the oaks and poplars, and run up to the tops. Theſe bear a kind of red grapes, the wine whereof is ſmaller than French Claret; but Mr. Glover is of opinion, that if ſome of them were planted in convenient vineyards, where they might be better expoſed to the influence of the ſun, and carefully kept and pruned, they would produce as good grapes as the Claret-grapes of France. There is alſo in the woods a little ſhrub with a berry like that of our elder, which is very pleaſant to eat; and likewiſe

wiſe a tree called Chincopin, which bears a nut reſembling a cheſnut, with a rough huſk, but much ſmaller.

On the ſides of the hills in Virginia, grows plentifully a ſpecies of Aſarum, or black Snakeweed, the roots whereof are brought over among the true Serpentaria Virginiana, and are promiſcuouſly uſed with them, being diaphoretic and alexipharmic.

Soldanella, or Sea Scurvy-graſs, is found in great plenty on the ſide of the bay. This herb, being excellently calculated for diſcharging water, contributes very much to the cure of dropſies and ſcurvies; and it is likewiſe uſed in rheumatic caſes. It works very roughly, and much diſorders the ſtomach.

There grows likewiſe in Virginia an herb called Dittany by ſome, and by others Pepperwort. It riſes to the height of twelve or eighteen inches; its leaves are very ſmall, and ſhaped like a heart, which ſhoot out of the ſtalk and branches directly oppoſite to each other; and it ſmells hot, and bites the tongue like pepper. The diſtilled water of this herb is an excellent remedy againſt worms, and an ounce of it provokes ſweat plentifully.

Here are alſo found two roots, ſuppoſed by the phyſicians to be Turbith and Mechoacan, both ſtrong purgatives. Turbith purges tough ſerous humours from the remote parts, and is therefore of ſervice in the dropſy, gout, and rheumatiſm. The root of Mechoacan is uſed to purge pituitous, ſerous, and aqueous humours from all parts of the body, eſpecially from the breaſt, and the head and nervous ſyſtem. That is to be choſen which is recent, white, and ponderous.

Our author takes notice of another medicinal plant, about a foot and a half or two feet high, whoſe leaves are rugged like thoſe of Borage, but longer, and its berries when ripe are yellow. The Engliſh call it the Fever or Ague-Root, from its ſervice in thoſe diſtempers. A drachm and a half of this root newly taken out of the ground, and infuſed in beer and water for twelve hours, purges with great violence; but a drachm of it in powder only excites ſweat, and that but moderately. Its taſte is a little bitter, and therefore ſomewhat hot.

In ſpeaking of the vegetables of America, which make a part of the Materia Medica, we ought by no means to omit Saſſafras, which is a yellow wood, of a briſk aromatic ſcent, the produce of a tree, whereof there are vaſt numbers in Florida, and alſo in Virginia, and other Engliſh provinces. The natives of Florida call it Pahamwe, and amongſt us it has obtained the name of Fennel-Wood, its ſmell ſomewhat reſembling that of fennel. It is principally of uſe in removing obſtructions, and ſtrengthening the internal parts, in cauſing fertility, and curing the venereal diſeaſe. It is reckoned a ſovereign remedy for catarrhs, and is eſteemed in the gout, ſciatica, and green-ſickneſs. In ſome families it has of late grown into faſhion as a common tea, which the ſhavings of it make agreeable enough; but its reputation of being good in venereal caſes is a detriment to it, and prevents a great deal of good which might otherwiſe be effected by uſing it more frequently.

Chuſe that covered with the thickeſt bark, reddiſh and rough, of a ſharp taſte, and ſtrong aromatic ſmell.

In New Spain, and ſeveral other parts of the Weſt Indies, grow thoſe ſeeds we call Vanillas, Vanelloes, or Banillas, which are uſed as an ingredient in chocolate, to which they give a pleaſant flavour; and they are alſo uſed to perfume ſnuff and tobacco. We do not find that they enter into any medicinal compoſitions, though Hernandez ſays, they are grateful to the ſtomach and brain, expel wind, provoke urine, reſiſt poiſon, and cure the bites of venomous animals.

Upon the bark of a certain tree growing in Nova Scotia, and the more eaſterly parts of New England, Mr. Winthrop ſays, there are little knobs containing a liquid matter like turpentine, of a very healing nature. The ſame gentleman mentions a vegetable called Silk-Graſs, the pods whereof are full of a ſort of fine cotton, which is uſed in ſtuffing pillows and cuſhions; but neither this nor the down of cotton-trees, which grow tall and large, is fit to ſpin. At the bottom of ſome of the leaves, near the ſtalk, there is a hollow knob, breeding a fly like a piſmire.

Here we might enumerate many other vegetable productions of the northern part of America, which are uſeful in medicine, dying, &c. but the detail would be tedious and inſipid; and therefore we ſhall finiſh this article with the Tulip-Tree, which grows wild in ſeveral of our colonies, and is a curioſity that deſerves to be mentioned. This tree riſes to a conſiderable height, and produces a vaſt number of flowers, in variety of colours and ſhape reſembling the tulips in our gardens, from whence its name. It bears no fruit, but when it is in full bloom, no tree in the world appears more beautiful.

FOSSILS.

THE Spaniſh dominions in North-America abound with mines of gold and ſilver, eſpecially ſilver, of which metal, it is ſaid, there are no leſs than a thouſand mines in the Mexican empire; but many of theſe are not wrought for want of hands. It is ſaid, that Louiſiana yields vaſt plenty of copper, and ſo fine, that it is frequently found on the ſurface, in pieces very pure, without melting; and thoſe who have tried the ore, ſay, that by the common methods, it yields above forty *per cent*. The lead ore in that country affords ſixty *per cent.* and has been diſcovered in quantities more than ſufficient for common uſe. Iron ore is alſo found plentifully in many parts, near the ſurface of the earth, from which a metal is extracted, little inferior to ſteel in goodneſs. Some mines of quickſilver have likewiſe been diſcovered. The mineral from whence the quickſilver is obtained, is of a ſcarlet, or purple colour, which the natives make no other uſe of, than to paint their faces and bodies with in time of war, or on occaſion of feſtivals and rejoicings. This ore is broken, and diſtilled in earthen pots, the necks of which are put into others, almoſt full of water, which laſt are placed in the ground; and being thus ſet in rows, almoſt contiguous, a fire is made over them with ſmall bruſh-wood, which drives the quickſilver out of the ore into the water.

Three or four men will attend ſome thouſands of theſe pots. The great trouble is in digging; but all the expence does not amount to a tenth part of the value of the produce.

To make it appear probable, that both gold and ſilver might be found in Louiſiana, Mr. Coxe gives us ſome accounts he received from perſons of credit, and particularly by letters from New Jerſey, written by one well ſkilled in the refining of metals, ſignifying, that for ſeveral years ſucceſſively, a fellow took a fancy to ramble with the Indians to the other ſide of the mountains, which ſeparate that colony and New York from the country we are ſpeaking of, and always brought home with him a bag, as heavy as he could well carry, of duſt, or rather ſmall particles of divers ſorts of metals, very ponderous. When melted, it appeared to be a mixture of metals, to which at firſt they could aſſign no denomination; but by repeated trials, they found it contained lead, copper, and when refined, above a third part of ſilver and gold. Great pains were taken to bring this fellow to diſcover where he got this treaſure, which ſerved him only to drink and ſot till he went on another expedition; but nothing could prevail upon him to declare any more than this, that about three hundred leagues, ſouth-weſt of Jerſey, at a certain ſeaſon of the year, there fell great torrents of water from the mountains, and when they ceaſed, the Indians waſhed the ſand or earth, at ſome diſtance below thoſe

falls,

falls, and at the bottom, remained that medley of metals.

Our author farther obſerves, that there are great quantities of orpiment and ſandarach in divers parts of this province; and writers on metals and minerals affirm, that they not only contain gold, but where they are found, they are generally the covering of mines of gold or ſilver.

As to the gems of Louiſiana, all that Mr. Coxe knows of, are amethyſts, of which there are very fine and large; and Turquoiſes, thought to be as fine and large as any in the world. There is alſo an account of Lapis Lazuli, which, according to thoſe ſkilled in mines, is another indication that gold is at no great diſtance.

But we need ſay no more of gems or metals, in this place, having ſpoken of them ſufficiently as they occurred in the courſe of this work.

Under this head, we may take notice of the Filtre-Stone of Mexico, though perhaps it ſhould rather be referred to the vegetable kingdom. It is ſaid to grow under water on the rocks, in ſome parts of the Gulph of Mexico, and to harden and petrify ſpontaneouſly in the air; but Dr. Vater, who has given ſome account of it in the Philoſophical Tranſactions, does not take upon him to determine its origin, nor the manner of its growth, both appearing to be very ſuſpicious. It has obtained the name of Filtre, from its poroſity, whereby it lets liquors paſs through it; and for this reaſon, pots and mortars are made from large pieces of it, to ſtrain liquors, particularly water to drink; for it is thought, that water filtrated through this ſtone, is thereby freed from all its impurities, and becomes more wholeſome. This is the reaſon, ſays the doctor, that theſe ſtones are highly valued in Japan, and ſold at the price of gold; becauſe the Japaneſe, who know nothing of the ſtone, or other diſorders in the kidnies, and who prefer health far before all other bleſſings, think the filtration of their drink contributes to the prolonging of life. But according to Le Clerc, and other writers, theſe tophaceous ſtones are not confined to Mexico, but dug up in ſeveral parts of Europe; and our author had a choice collection of foſſils preſented to him, by Dr. Ehrharr, of Memingen, in which there was a Tophus peculiarly porous, found about that city, which would ſtrongly imbibe water as ſoon as applied to its ſurface. However, whether the Mexican Filtre be taken out of the ſea, or dug out of the earth, Dr. Vater does not pretend to determine, as has been already intimated.

With reſpect to the virtue aſcribed to the Mexican Filtre-ſtone, our author, from ſeveral obſervations and experiments, makes it evident,

dent, that no Stone-Filtres are able to depurate water, and ſeparate the ſaline earthy and mineral impurities therein diſſolved: yet he does not deny, but that muddy and ſlimy waters, may, by ſtraining through ſuch ſtones, become clear and pellucid; becauſe theſe impurities do not diſſolve in the water, or intimately incorporate with it, but only float therein. Theſe excepted, no other waters can be made purer, as the doctor learned from repeated experiments, made both by the Filtre of Holland, the Tophus of hot baths, and common ſtone, on ſeveral kinds of river and ſpring water; for having examined their weight before and after Filtration, he found little or no difference. How happy therefore, obſerves the doctor, are the countries to which Providence has given limpid and wholeſome ſprings of water, which require no ſuch Filtres! But as for thoſe that are deprived of this bleſſing, the beſt they can do, is to uſe rain-water, which by diſtillation, is freed from all its impurities.

We have already in ſeveral places taken notice of the extraneous foſſils that are found in different parts of the world, and particularly of the bed of oyſter-ſhells near Reading, in Berkſhire; but this ſeems trifling, compared to the accounts we have of the vaſt quantities of theſe ſhells found in Virginia, where for many miles together, the earth is intermixed with them to the depth of ſeveral yards. In ſome places, the ſhells lie cloſely bedded together, and look like the veins of a rock, of which ſome are three or four yards thick, and as hard as free-ſtone. Of theſe rocks of oyſter-ſhells, which are not ſo much petrified, they burn and make all their lime; and in the looſer banks of ſhells and earth, there are often found perfect teeth petrified, ſome of which are two or three inches long, and above an inch broad, the part that one may ſuppoſe to have grown out of the jaw, being poliſhed, and almoſt as black as jet. The back-bones and ribs of whales, according to Mr. Clayton, have alſo been dug up many miles diſtant from the ſea.

But this ſubject having been ſufficiently handled in the preceding parts of this work, we ſhall not enlarge upon it here. We may add, however, one particular relating to Virginia, which is very remarkable, viz. that from the ſea-coaſt, for a hundred miles up into the country, there is ſcarce a ſtone to be ſeen, except here and there ſome rocks of iron-ore: ſo that they ride their horſes without ſhoeing them, and the country and climate being dry, their hoofs are harder than thoſe of our horſes in England. Inſtead of ſtones, they find a clay, of which they make very fine bricks; and it is to be obſerved, that at the water-falls from the mountains, there are ſtones enough of different kinds, fit for paving and other uſes. The hills likewiſe afford quarries of ſlate and of a kind of free-ſtone; and they have alſo a ſort of ſhining pebbles, not unlike Kerry-ſtones, which, though generally ſoft, are ſaid to harden by the air, and when poliſhed, are extremely beautiful. As to mines, they have ſeveral of good iron, in divers parts of the country: but we need not dwell longer on a ſubject which affords us nothing very remarkable.

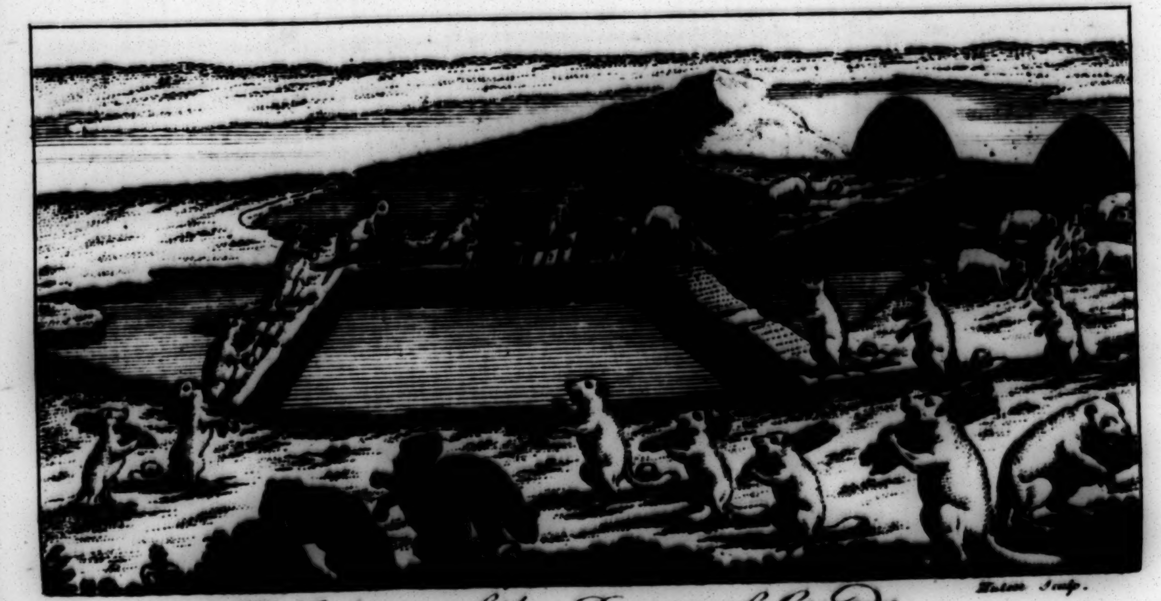
CAVES, LAKES, CATARACTS, &c.

A Traveller gives us an account in the Philoſophical Tranſactions, of a remarkable cave, ſome leagues to the north-weſt of Mexico, gilded all over with a ſort of leaf-gold, which had deluded many Spaniards by its promiſing colour, for they could never reduce it into a body, either by quickſilver or fuſion. Our author went thither one morning, with an Indian for his guide, and found its ſituation was pretty high, and in a place very proper for the generation of metals. As he entered into it, the light of the candle ſoon diſcovered on all ſides, but eſpecially over his head, a glittering canopy of theſe mineral leaves; at which he greedily ſnatching, there fell down a great lump of ſand, that not only put out his candle, but almoſt blinded him: and calling aloud to his Indian, who ſtood at the entrance of the cave, as being afraid of ſpirits and hobgoblins, it occaſioned ſuch thundering, and redoubled ecchoes, that the poor fellow, imagining he had been wreſtling with ſome infernal ghoſts, ſoon quitted his ſtation, and thereby left a free paſſage for ſome rays of light to enter, and ſerve him for a better guide. Our author's ſight was ſomewhat affected by the corroſive acrimony of the mineral duſt; but having relighted his candle, he proceeded in the cave, heaped together a quantity of the mineral mixed with ſand, and ſcraped off from the ſurface of the earth ſome of the glittering leaves, none of which exceeded the breadth of a man's nail, but with the leaſt touch, were divided into many leſſer ſpangles, and with a little rubbing they left his hand gilded all over.

On the weſtern coaſt of Mexico there is a vaſt hollow rock, which having a large hole at the top, makes a frightful noiſe at every ſurge of the ſea, and ſometimes ſpouts up water like a whale, to a prodigious height: but though this is told as ſomething wonderful, we imagine there is nothing in it but might eaſily be accounted for.

It is reported of the Lake of Mexico, that it has two ſorts of water, one part of it being freſh, and abounding with fiſh, inſomuch that the fiſhery brings in to the government above twenty thouſand crowns per annum; and the other part ſalt, and ebbing and flowing like the ſea. The freſh water is ſaid to be uſually calm, but the ſalt generally boiſterous, and to breed no fiſh. It is added, that in the middle of this lake, there is a rock, from whence iſſues a conſiderable ſtream of hot water.

The large Lakes of Canada deſerve to be mentioned, the principal of which are five in number, and are ſometimes called ſeas, on account of their extent. That called the Upper Lake, or the Lake of the Nadoueſſons, is eſteemed at leaſt an hundred and fifty leagues in length,



Toms Sculp.

The Industry of the Beavers of Canada.

BIBLIOTHECA·BODLEIANA·

length, ſixty in breadth, and five hundred in circumference. It is all over navigable, and has ſome iſlands, eſpecially one called Minong, above threeſcore miles in compaſs, wherein both the Indians and French affirm there is a great mine of very pure copper, the ore affording three fifths of fine metal, without any preparation beſides melting. It is remarkable of this lake, that all along the ſhore on the ſouth ſide it is not above four or five fathoms deep, but gradually increaſes in depth as we paſs over to the north, till no bottom is to be found at a hundred and fifty fathoms.

The other lakes, though very large, are not equal to this in dimenſions.

In the river Niagara, which forms a communication between two of theſe lakes, there is one of the moſt ſurpriſing cataracts or falls of water yet diſcovered in the world. Father Hennepin, a French miſſionary among the Canada Indians bordering on its banks, has deſcribed this prodigious caſcade as falling down a precipice a hundred fathoms high, which is ſix hundred feet; but Mr. Dudley has publiſhed an account of this cataract, taken at Albany, in 1721, from Mr. Boraſſaw, a native of Canada, which perhaps comes nearer the truth. That gentleman ſays, that the governor of Canada having ordered his own ſon with three other officers to ſurvey the Niagara, and take the exact height of the cataract, they accordingly did ſo with a ſtone of half a hundred weight tied to a large cod-line, and found it upon a perpendicular no more than twenty-ſix fathoms. Upon Mr. Dudley's objecting Hennepin's account of this cataract to Mr. Boraſſaw, he replied, that indeed every body had depended upon it as right till the late ſurvey; and he acknowledged that below the cataract for a conſiderable way there were a great many ſmall ledges of rocks acroſs the river, which gradually leſſened till they came to a level; ſo that if all the deſcents were put together, he did not know but the difference of the water above the falls, and the level below, might come up to Father Hennepin's account: but the cataract, properly ſo called, is no more than twenty-ſix fathoms, or a hundred and fifty-ſix feet; which is a prodigious thing, and what the world cannot parallel *, conſidering the largeneſs of the river, which, ſtraitened as it is in that part, is near a quarter of an Engliſh mile broad, and very deep water. Both above and below theſe falls the river is much wider, and from below there is no coming nearer them by water than about ſix Engliſh miles, the torrent is ſo rapid, and the whirlpools ſo terrible.

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* Miſſon tells us, that the river Velino in Italy, throws itſelf from a ſteep rock, three hundred feet high; and De L'Iſle repreſents one of the cataracts of the Nile, as falling from a height of two hundred feet, as we have already obſerved. But for want of an actual meaſurement, theſe accounts ſeem not ſo much to be relied on, as that here given of the cataract of Niagara.

It has been alledged that this cataract makes ſuch a prodigious noiſe, that people cannot hear each other ſpeak at the diſtance of ſome miles from it; but M. Boraſſaw affirms, that they may converſe together cloſe by it: and it has been alſo poſitively aſſerted, that the ſhoot of the river, when it comes to the precipice, was with ſuch a mighty force, that man and horſe might go under it without being wet; but this M. Boraſſaw likewiſe denies, and ſays that the water falls in a manner directly down. He farther obſerves, that the miſt or ſhower which the falls occaſion, is ſo extraordinary as to be ſeen at five leagues diſtance, and riſes as high as the common clouds. In this miſt, when the ſun ſhines, there is always a glorious rainbow.

Mr. Dudley tells us, that he himſelf ſaw a cataract three leagues above Albany, in the province of New York, upon Schenectada river, called Cohoes, which is not above forty or fifty feet perpendicular; but from this there alſo ariſes a miſty cloud, which deſcends like ſmall rain, and exhibits, when the ſun ſhines, a beautiful rainbow *, that moves as the ſpectator moves, according to the angle of viſion.

Our

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* Miſſon relates the ſame of the miſt ariſing from the cataract of Velino, mentioned in the preceeding note. Mr. Smith took notice of the like phænomenon at the cataract of Narva, in Livonia. We

Our author adds, that twenty miles to the eaſtward of Hudſon's River, near the middle of a long hill, he met with a briſk noiſy brook, ſufficient to turn a mill; and having obſerved nothing of it at the beginning of the hill, he turned about and followed the courſe of it, till at laſt he found the end of it, being abſorbed and ſinking into the ground: and though it be common in other parts of the world for brooks and even rivers to be thus loſt, it was the firſt of the ſort he had ever heard of or ſeen in that country.

As to rivers, the northern part of America abounds with large ones, of which it is not our buſineſs to enter into a detail, but ſhall give a brief account of the two moſt conſiderable, which are thoſe of Canada or St. Laurence, and Miſſiſippi. The river of St. Laurence, a name given it by the French, is the largeſt in North America, and inferior to few in the world, being computed to be about thirty leagues broad at the mouth, and two hundred fathoms deep: it takes its riſe, as is ſuppoſed, from ſome of the great lakes above-mentioned, and falls into the Gulf of St. Laurence, at

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We alſo read of marine rainbows, ſometimes obſerved in a much agitated ſea, when the wind ſweeps away the tops of the waves, and carries them aloft, ſo that the ſun's rays falling on them are refracted, &c. as in a common ſhower, and paint the colours of the bow, but leſs diſtinct and of leſs duration.

the Iſle of Anticoſti, having received many other rivers in its courſe, which is generally reckoned to be about eight hundred leagues. The ſource being unknown, the length of its courſe cannot be determined; and as to its navigation, authors give us ſuch different accounts as are not eaſy to reconcile, ſome repreſenting it as ſafe, eaſy, and pleaſant, and others as ſo extremely difficult and dangerous, that the moſt experienced pilots have much ado to eſcape the many dangers they are expoſed to, from the ſandy banks, rocks and ſhoals along the north ſhore; but however the river in general is very deep, nor is its navigation interrupted by cataracts, till a great way above Quebec, which is more than three hundred miles from the ſea. There are many pleaſant iſlands in it, ſome of which are inhabited, well cultivated, and fertile.

The Miſſiſippi, Meſſaſippi, or Meſchacebe, as Mr. Coxe calls it, is another very large river, which runs from north to ſouth through the greateſt part of Florida, or Louiſiana, and empties itſelf by two mouths, Coxe ſays ſeven, into the Gulf of Mexico, after having received innumerable rivers in its courſe. The ſource of this river is likewiſe not certainly known, though Mr. Coxe ſays, it is in the country of the Sieux, not very far diſtant from Hudſon's Bay. The natives ſay, it flows from a large ſpring in the country of the Iſſati, in about the fiftieth degree of latitude; and ſome Frenchmen pretend to have ſailed up it to within two leagues of its head, where they carved the arms of France on the trunk of a tree; but theſe accounts, we imagine, are only calculated to ſupport the pretenſions of the French to this vaſt country.

* * *

SECT. III.

Particular Deſcriptions of the moſt remarkable public Buildings, and other ſingular Productions of Art in North America. *Curious Remains of Antiquity; with ſome ſhort Account of the antient and modern Inhabitants.*

AS, in the preceding chapter, we have endeavoured to give the reader ſome idea of the grandeur of the Peruvian monarchs, before the Spaniards conquered their country, we ſhall now conſider the preſent and antient ſtate of the city of Mexico, now an archbiſhop's ſee, and the ſeat of a Spaniſh viceroy, and formerly the capital of a great and opulent empire.

This famous city ſtands on a lake of its own name, on the eaſt ſide of a valley, at the foot of a ridge of hills; and is only to be approached by five cauſeys: but has no gates, walls, or artillery. It is one of the moſt regularly built cities in the world, the ſtreets being ſtraight, and croſſing one another at right angles, and in the narroweſt of them three coaches may go abreaſt. It is almoſt quadrangular; being more than five miles one way, and little leſs than four the other, and contains about an hundred thouſand inhabitants, many of them immenſely rich, the moſt valuable commodities

of

of the Eaſt and Weſt Indies, as well as Europe, being daily expoſed to ſale in their market-place, which is a ſpacious ſquare in the middle of the city. The houſes are built of brick and ſtone, but not very high, the country being ſubject to earthquakes; and as all the buildings are very convenient, ſo ſome of them are very magnificent, eſpecially the cathedral, which was a work of ſixty years, and is embelliſhed with the fineſt painting, gilding, carving, and other ornaments. This ſtructure, with the cloyſters and dwellings of the clergy adjoining to it, takes up a large ſpace of ground; and the revenues belonging to it are equal to the beauty and magnificence of the buildings. The high altar is ſaid to have coſt fifty thouſand pieces of eight, each piece about four ſhillings and ſixpence Engliſh; and the chalice for the ordinary ſervice eleven thouſand, being of gold enchaſed, and ſet round with rubies. There is alſo an image of the Virgin Mary, which is of maſſy ſilver, adorned with rubies and pearls to the value of thirty thouſand pieces of eight, and which is carried in proceſſion once a year, when a certain number of maids draw lots, for three hundred pieces of eight for their portions.

Beſides the cathedral there are about thirty other fine churches, twenty-two convents of both ſexes, and ſeveral hoſpitals richly endowed. The revenue of the cathedral is at leaſt ſeventy thouſand pounds *per annum*, of which the archbiſhop has fifteen thouſand, beſides a great many fines and other perquiſites.

The great ſquare or market-place already mentioned, has a piazza on one ſide of it, under which are ſome of the richeſt ſhops in the world; and on the oppoſite ſide ſtands the magnificent palace of the viceroy, which was new built in the year 1698, and whoſe principal front is not inferior to that of the palace at Naples, which it reſembles, particularly in its noble ſtair-caſe, leading to a great number of beautiful apartments: and yet the archbiſhop's palace, which is built round like a theatre, is reckoned a more ſtately and elegant ſtructure than that of the viceroy.

Next to this great ſquare is a ſtreet called the Plateria, inhabited by goldſmiths and ſilverſmiths, whoſe ſhops are furniſhed with ſuch a variety of utenſils and ornaments of gold, ſilver, and jewels, as perhaps cannot be paralleled in any other city in the world: for here even the Negro women that walk by the ladies coaches wear bracelets of gold, pearl necklaces, and jewels in their ears; and the black foot-boys are dreſſed in rich liveries, dawbed with gold and ſilver lace. Here they are continually making either church or family plate, eſpecially when the merchants are beſpeaking goods againſt the arrival of the galleons; at which time the ſhops and warehouſes are filled with cheſts of plate deſigned for Old Spain, piled up to the very cielings. The glaſſes or ſaſhes, like thoſe of our goldſmiths, are full of

gilt

gilt plate, and their cabinets are filled with vaſt quantities of rings, pearls, large jewels, numberleſs toys, eſpecially gold ſnuff-boxes, enamelled and ſet with rubies and emeralds, of which it is ſaid ten thouſand are ſometimes to be ſeen in this ſtreet, and hardly a fleet departs for Old Spain without carrying off at leaſt five hundred.

The ſtreet where the mercers expoſe their ſilks, has a very grand appearance; and that where the tradeſmen reſide, who deal in braſs, ſteel, and iron ware, is very long and ſpacious: but the ſtreet inhabited by the nobility, gentry, and lawyers, without any ſhops intermixed, exceeds all the reſt for ſtately buildings, the principal whereof is the fine palace of the Marquis del Valle, the ſucceſſor of Cortez, who conquered Mexico, which ſtands on the ground where the palace of the Emperor Montezuma ſtood, and is deſervedly admired for its ſtructure and dimenſions.

There is in Mexico, a pleaſant ring or park, planted with trees, and adorned with fountains and water-works, whither the quality of both ſexes, and the gay part of the town, reſort every evening. Several hundreds of coaches are frequently ſeen here, moſt of them with fine equipages, and a great number of pages and other ſervants, of whom the former are generally Negroes. The ladies are ſaid to be great gameſters; but the chief diverſion for people of all ranks is in canoes upon a fine canal, the banks whereof are furniſhed with vaſt varieties of dainties for their accommodation. Others divert themſelves with fiſhing in boats upon the lake, carrying along with them wine and cold proviſions, The neighbourhood of the city is rendered extremely pleaſant by the many villages, monaſteries, palaces, country ſeats, &c. which either ſtand on iſlands, or on the banks of the lake. Their beſt water is brought to town by an aqueduct from a mountain ſeveral miles diſtant.

Near the beginning of this aqueduct is Chapultepec, the burial-place of the Spaniſh viceroys, as it was formerly of the Mexican emperors. Here is a ſumptuous palace, with fine gardens and water-works, and a beautiful chapel, the ornaments whereof are reckoned to have coſt above a million of crowns.

As to the Indian antiquities about Mexico, the Spaniards have deſtroyed the greateſt part of them, but about ſeven leagues from the city there ſtill remain two remarkable pieces, viz. the pyramids of the ſun and moon, the founders of which are not known. They appear cut out in ſteps like thoſe of Egypt; and on the top of them formerly ſtood two images of a monſtrous ſize, repreſenting the ſun and moon, which the Indians worſhipped. The pyramid of the ſun ſtands about two hundred paces from the other, and is about a fourth part higher.

Having given a deſcription of modern Mexico, we now come to treat of the antient city, which, as it ſtood on the ſame ground the preſent city ſtands on, there is reaſon to believe was ſquare, or pretty near that figure; and its dimenſion may be gueſſed at from the number of families reſiding in it, which the hiſtories of that conqueſt make to be about ſixty thouſand. As at preſent, there was a vaſt ſquare in the middle of the city, which, at the time of their great fair, was reſorted to by at leaſt a hundred thouſand people, and contained a great number of booths and tents, wherein they lodged their merchandiſe. The city was divided into two parts; the one inhabited by the court, the nobility, and perſons of diſtinction; the other by tradeſmen, and people of inferior rank. The former part was much the largeſt, where the ſtreets were ſpacious, the houſes of white hewn ſtone, one ſtory high, and they had flat roofs, adorned with battlements. Their cielings were of cedar, cypreſs, or other odoriferous wood; and their hangings either of furs and beautiful feathers, or cotton-linen, painted with a variety of figures of plants and animals: but notwithſtanding their wealth, none of the nobility were ſerved in plate, which was the prerogative only of the emperor.

The palace of Montezuma, the laſt emperor, was ſo very large, that it had thirty gates, which opened into as many different ſtreets, the principal front making one ſide of the great ſquare above-mentioned. The materials of this building were poliſhed jaſper, black, red, and white; and over each gate were the arms of Montezuma, being a griffin with the wings extended, and a tiger in his talons. The whole conſiſted of ſeveral ſquare courts, and was ſo vaſtly extenſive as to contain apartments for three thouſand of the emperor's women, and a proportionable number of other domeſtics.

Another palace aſſigned to Cortez and his army, was likewiſe of a ſurpriſing extent, containing commodious rooms and apartments for his five hundred Spaniards, and ſix thouſand Indians, his auxiliaries; and when the Spaniſh general had planted his artillery, and placed his guards, it had much the appearance of a fortreſs, being ſurrounded with a thick ſtone wall, and flanked with towers.

When Cortez and his army firſt entered the ſtreets of Mexico, they were met by two hundred noblemen of the emperor's houſhold, clothed in one livery, with large plumes of feathers on their heads, all of the ſame faſhion and colour. Theſe, after meeting and paying their compliments to the Spaniſh general, fell back, and then dividing themſelves, made a lane for the Spaniards. Then came another body of the nobility of a ſuperior dignity, who made a more ſplendid appearance; and in the midſt of them was the emperor Montezuma, carried in a chair of beaten gold, on the ſhoulders of his favourite courtiers, whilſt four of them ſuſtained a canopy over his head. The whole was adorned with beautiful feathers, through which the glittering

gold

gold appeared; and the emperor was preceded by three officers with rods of gold, the harbingers of his approach, on whoſe appearance the people fell upon their faces, not daring to look upon their monarch. Cortez diſmounting when the Mexican emperor drew near, the latter alighted from his chair, and carpets were ſpread in the ſtreets for him to tread on. He advanced, it is ſaid, with a ſolemn ſlow pace, leaning on the arms of two princes his relations, and was met by Cortez with a becoming haſte and a moſt profound reverence; which the emperor anſwered by touching the ground with his hand, and afterwards raiſing it to his lips; which was looked upon as a great condeſcenſion, and added to the eſteem and veneration his ſubjects already had for the Spaniards. The conference between the Mexican emperor and Cortez was ſhort at this interview, after which Montezuma commanded one of his princes to conduct the general to the palace appointed for his reſidence, and then returned to his own. The ſpacious apartments of this palace have been taken notice of above.

Beſides the two palaces already mentioned, Montezuma had ſeveral pleaſure-houſes in and about the city; in one of which were great galleries, ſupported by pillars of jaſper, and in them were kept all ſorts of land-fowls and birds that Mexico produced. The ſea-fowls were preſerved in reſervoirs of ſalt water; and thoſe that were bred up in lakes and rivers, in others of freſh water. And ſo numerous were theſe birds, that it is ſaid to have been the buſineſs of three hundred men to look after them. In another ſquare of the palace were kept all manner of wild beaſts in their reſpective dens or cages, in a moſt regular order. In another ſquare of the ſame palace were apartments for dwarfs and monſters, fools and naturals, of the human ſpecies, kept for the diverſion or ſervice of the court. Here were alſo armouries, well repleniſhed with all ſorts of Indian weapons; and the artificers that formed and cleaned theſe arms, had apartments in the ſame quarter.

All theſe palaces of the Mexican emperors had ſpacious and elegant gardens, laid out in fine ſhady walks, beds of fragrant and medicinal herbs, and parterres of beautiful flowers, with magnificent ſummer-houſes, bagnio's, arbours, and fountains. But there was a building in the moſt ſolitary part of the gardens, which ſurprized the Spaniards more than any thing they met with, and it was called the Houſe of Sorrow, becauſe the emperor uſed to retire thither on the death of his relations, or on any calamity, public or private. The roof, the cieling, and the ſides were black, and only juſt ſo much light was admitted as to diſcover the diſmal obſcurity. In this gloomy manſion, ſay the Spaniſh authors, Montezuma uſed to converſe familiarly with the prince of darkneſs.

The principal of the Mexican temples was dedicated to Viztlipuzli, the god of war. The whole edifice formed a large ſquare, and was en-

encompaſſed by a wall of hewn ſtone, adorned on the outſide with knots of twiſted ſerpents. At a little diſtance from the chief gate was a place of worſhip, built of ſtone, having an aſcent of thirty ſteps, which led to a long flat roof, and the front of it, as the Spaniards relate, was decorated with the ſkulls of men, who had been ſacrificed to their idols. On each ſide of the ſquare, was a magnificent gate, and over every one of them four ſtatues, ſuppoſed to repreſent ſome ſubordinate deities. At the foot of the wall, within, were the apartments of the prieſts, and of their inferior officers and ſervants; and yet there was room enough left for eight or ten thouſand perſons to dance on their ſolemn feſtivals. In the middle of the ſquare, was a ſtructure of a pyramidal form, three ſides whereof were ſmooth, and a fourth aſcended by a hundred and twenty ſteps. There was a flat on the top, forty feet ſquare, laid with jaſper of different colours. This flat was ſurrounded with twiſted rails, and on each ſide was a marble ſtatue, ſupporting a vaſt candleſtic, between which was a green ſtone, five ſpans high from the ground, which terminated in a point; and on this, it is ſaid, they extended the human victims they ſacrificed, throwing them on their backs, and ripping them open with ſharp flints, inſtead of knives, after which they tore out their hearts, and offered them to their idols. On the farther ſide, oppoſite to the ſtairs, ſtood a chapel of exquiſite materials and architecture, where an idol was placed above an altar. This image was of human form, and ſet on a throne, ſuſtained by an azure globe, which they call Heaven; and from the ſides of it iſſued four rods, whoſe ends reſembled the heads of ſerpents. On the head of the image was a helmet, adorned with plumes of various colours; and its countenance was ſevere and terrible. In the right hand, it held a twining ſerpent, which ſerved for a ſtaff; and in the left hand, four arrows, which were revered as the gift of heaven. It likewiſe bore a ſhield, adorned with fine white plumes, in form of a croſs.

On the left hand, was another chapel, in which was the image of Thalock, another of the Mexican deities, almoſt in every reſpect reſembling the former. Theſe two idols were ſo intimately united, in the opinion of the poor Indians, that they aſcribe to them the ſame attributes, and paid them the ſame honours. The walls and altars of theſe chapels were immenſely rich, covered with jewels and precious ſtones, ſet on feathers of various colours. There were eight of theſe temples in Mexico, of the like architecture and equal wealth; beſides two thouſand ſmall ones, dedicated to ſo many different gods, every ſtreet having its tutelar deity, every diſtreſs or calamity, its particular altar.

On an iſland in the lake, about two leagues from Mexico, was ſituated Iztacpalapa, the two cities having a communication together by a ſpacious ſtone cauſey. This town conſiſted of ten thouſand houſes, many of which were built like thoſe of Mexico. The rooms of the

Cacique's palace were hung with cotton-linen, finely painted; and among the curioſities in his garden, he had a ſquare reſervoir, with ſtairs to go down to the bottom, each ſide being four hundred paces.

Another city, called Cholula, was for beauty like Valladolid in Spain, containing twenty thouſand ſouls, and having ſuburbs of equal dimenſions.

The city of Tlaſcala was alſo built with ſtone and brick, like the houſes of Mexico, and was ſituated on four eminences, which were united and defended by a ſtone-wall: ſo well were the Mexicans ſkilled in architecture in thoſe days, though now there are not any towns in the country built of brick or ſtone, except thoſe in poſſeſſion of the Spaniards.

As to the buildings of the Indians, even thoſe who have ſubmitted to the Spaniards, and embraced their religion, live in thatched huts, or cottages, and obſerve little regularity in laying out their ſtreets. Their houſes are not contiguous, nor in any order; only they have one common guard-houſe, ſituate on an eminence, whither they reſort on the approach of an enemy, or when they aſſemble in council. Their method of building, is to ſet up poſts, ſeven or eight feet high, and two or three feet aſunder, and having wattled up the intervals, they cover them with clay. The roof is made like that of our barns, and uſually covered with Palmetto leaves, a hole being left in the middle to let out the ſmoke. Inſtead of beds, they uſe hammocks, which are hung up on the principal beam, from one end of the houſe to the other; nor have they any ſeats or tables, but blocks of wood. Their furniture conſiſts of pots, pans, and other kitchen utenſils, with calabaſhes, or gourds of an uncommon ſize, to hold their liquor: and their arms and other implements were hung round the cottage as ornaments. Their guard-houſe is generally about a hundred and thirty feet long, five and twenty broad, the walls nine or ten feet high, and the roof covered in the ſame manner as their cottages. They have narrow loop-holes on the ſides, from whence they can annoy an enemy with their arrows, eſpecially as the ground is cleared of wood and ſhrubs all round to a conſiderable diſtance. However, by ſhooting flaming arrows into the thatch, theſe light fortreſſes are eaſily deſtroyed.

Before we take leave of Mexico, it is not amiſs to obſerve, that the Mexicans differ widely in their genius and temper from what they were when the Spaniards arrived amongſt them. The firſt adventurers inform us, that they were a very ingenious people, inoffenſive and hoſpitable; and that the generality of them were weary of their idolatrous ſuperſtitions, and particularly deteſted their human ſacrifices. It appears they were no mean artificers in painting, ſtatuary, and building. They uſed both the pencil, and the beautiful feathers of birds, in drawing and forming of pictures; and without iron tools, they had found means of hewing

ing from the rock, and poliſhing vaſt pillars and ſlabs of marble, and likewiſe precious ſtones and jewels. They made offenſive and defenſive armour; wrought mines of gold, ſilver, and copper; melted and ſeparated theſe metals, and afterwards worked them into different utenſils. We find alſo, that they built large towns, removed ſtones of great bulk from place to place; and all this by mere dint of labour, without the aſſiſtance of horſes, oxen, or other cattle. They had likewiſe images of gold and ſilver, wood and ſtone; but how they formed them, without ſuch inſtruments as we make uſe of, is to us a myſtery; for it ſeems the Spaniards were ſo intent upon plunder, that they neglected to make proper obſervations on theſe articles; at leaſt, they did not think fit to tranſmit an account of them to poſterity. Sharp flints, indeed, in ſome meaſure, ſupplied the want of knives, axes, &c. but it ſhewed a great genius and uncommon application, that they were able in ſuch circumſtances, and with no better inſtruments, to perform any thing curious.

The principal manufacture of the ancient Mexicans, was cotton-linen, which they ſpun and wove, and afterwards painted with the figures of men, beaſts, birds, flowers, &c. In ſome caſes, they made uſe of the ſinews of animals inſtead of thread, and of bones inſtead of needles. But though theſe Indians were ſuch ingenious artiſts two or three hundred years ago, there are ſufficient reaſons to be given for their not being ſo at preſent. The Spaniards, under a pretence of zeal for deſtroying the Pagan temples and idols, but more for the ſake of plunder, ruined every town where arts or manufactures flouriſhed, and reduced the natives to the moſt abject ſlavery, compelling them to work in their mines, and ſupply the place of beaſts of burden: and beſides, the Europeans being provided with tools and inſtruments to perform things in a better manner than the Indians could do, under ſo many diſadvantages, it is no wonder the latter neglected their former employments.

Thoſe of the open country, who have ſtill preſerved their liberties, of whom there are great numbers, are people of humanity, brave, generous, active, and unacquainted with the ſordid vices of thoſe who live in towns among the Spaniards. Every man builds his own houſe, and makes his own arms and implements, and great part of their time is ſpent in hunting, ſhooting, and fiſhing. They cultivate but little ground, planting juſt enough Indian corn, roots, &c. to ſerve the neceſſities of the family; and theſe plantations are left to the care of the women, after the men have cleared the ground. The women alſo ſpin and weave their cotton, do the houſhold buſineſs, and in every thing ſerve their huſbands with chearfulneſs and alacrity. They even follow them when they go a hunting, and carry proviſions, with calabaſhes, or gourds for their drink, and pipkins to dreſs their food. Every man breeds up his ſon to the exerciſes of hunting and ſhooting, at which laſt, the very boys are ſo dextrous, that they will ſplit a cane with an arrow at the diſtance of twenty yards. Thoſe of the Province of Honduras, are particularly active, ſtrong, and nimble, and are bred to throw the lance, harpoon and dart, and to draw the bow, from their infancy; and it is ſaid, that with a ſmall cane, they will parry any of theſe miſſive weapons. When they learn the uſe of guns, they are excellent markſmen, and are brave and daring in battle; though moſt of the other Indians are much degenerated from the courage of their anceſtors.

We ſhall only add, that the Mexicans have their dances and their muſic, ſuch as drums, and pipes; and indeed they ſeem to love every thing that makes a noiſe, be the ſound ever ſo diſagreeable. They frequently dance thirty or forty in a circle, humming a kind of tune all the while, ſtretching out their hands, and laying them on each other's ſhoulders. Sometimes they jump and ſkip about, and uſe the moſt antick geſtures for ſeveral hours, till they are heartily weary; and now and then one ſteps out of the ring to make ſport for the reſt, ſhewing tricks and feats of activity. The women likewiſe have their dances and muſick, and other diverſions by themſelves.

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